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ASPs, what gives? **Application service provider start-ups failed to deliver and many went belly up. But software as a service isn't dead. PAGE 42.**

NetworkWorld

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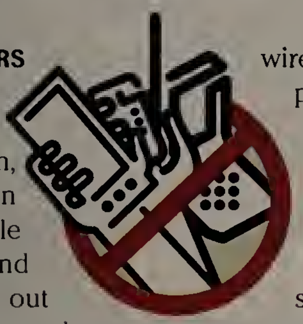
October 29, 2001 ■ Volume 18, Number 44

IT 'goodies' get closer scrutiny



■ **BY JENNIFER MEARS**

In the heady days of the Internet boom, corporations were in a giving mood. Mobile phones, pagers and PDAs were handed out as part of new-hire packages. Companies instituted PC and Internet access giveaway programs to nurture more computer-literate workers.

Times have changed. A tougher economy and the events of Sept. 11 are forcing businesses to re-evaluate how they spend their IT dollars. Discretionary perks such as PCs, home Internet access and wireless devices, not surprisingly, are getting renewed scrutiny.

"As is the case with most things today, the question is, 'Is this critical for you?'" says Zeus Kerravala, an analyst with The Yankee Group. "We're even seeing that with employees themselves: Is the employee critical — if not, the employee goes. So, obviously, some of the toys will go as well."

Shortly after reporting its first back-to-back quarterly loss in nearly a decade earlier this month, Ford Motor Co., decided

See Perks, page 69

New tools are on the way to help you clean up your

Storage mess

■ **BY DENI CONNOR**

ORLANDO — Storage vendors are finally heeding the cries of enterprise customers who want single-view management tools that can corral their unruly collections of incompatible storage arrays, devices and applications.

Whether these new "open storage management frameworks" from the likes of EMC and Hitachi Data Systems will be easy enough to use to justify wide deployment remains an open question, industry experts say.

"All [storage] companies are trying to do the exact same thing," says Dwight Gibbs, an IT executive for The Motley Fool in Alexandria, Va.

That rush to open frameworks should be a boon for customers, Gibbs adds.

"Once this software works, it will commoditize the hardware, and prices will fall through the floor," he says. "At that point you'll have one pool of storage, and you can go to any vendor."

Among those jockeying to meet this management need:

- Industry leader EMC — long notorious for the proprietary nature of its products — this week will debut three components of its new open framework called Enterprise ControlCenter/Open Edition. These components, which are part of the company's Automated Information Storage strategy, will let software vendors tie their applications and hardware to the framework. They will also let IT managers discover storage resources, report utilization information and automate the replication and restoration of data from any storage device on the network.
- At last week's Storage Networking World conference in Orlando, Hitachi unveiled Hi-Command, which consolidates storage operations and manages capacity on Hitachi Freedom and Sun StorEdge 9900 arrays. Hi-Command will manage other vendors' storage-area network (SAN) gear as well as direct- and network- attached equipment.
- BMC last week announced enhancements to its Patrol Application Storage Resource Manager (ASRM) software that include the ability for IT professionals to charge for storage utilization and

See Storage, page 68

More online!

Read more about the heightened priority of storage and get links to our breaking storage news. **DocFinder: 6680**

Terrorism spurs Web collaboration effort

■ **BY CAROLYN DUFFY MARSAN**

An obscure Web-based collaboration system under development by the State Department has caught the eye of Washington decision-makers as a possible solution to the information-sharing challenges that federal agencies face in the ongoing war against terrorism.

The Overseas Presence Interagency Collaboration System was designed in response to the 1998 bombings of U.S. embassies in Kenya and Tanzania. Currently in a prototype phase, the system would provide leading-edge knowledge management and collaboration tools over an intranet to 40 federal agencies with overseas operations, including the Defense Department, U.S. Agency

See Collaboration, page 14

■ Your take

Network executives share their wisdom

For the first in our new series of network executive Q&As, we spoke with State Department CIO Fernando Burbano. Read his thoughts on:

- **The agency's massive network overhaul.**
- **The network's role since the Sept. 11 attacks.**
- **Getting the most bang for your network bucks.**

STAN BAROUH

Page 20

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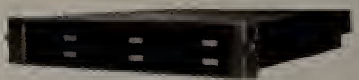

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Ulrich Seif, CIO, National Semiconductor

PHOTO: ERICMILLETTE.COM

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The dot-com meltdown has led to the demise of many ASP start-ups. But the ASP concept is not dead. In fact, Microsoft and Oracle are now advancing the model. **Page 42.**

The ABCs of videoconferencing

If you're considering videoconferencing, this primer will take you through the process. **Page 46.**

Windows XP

Microsoft's new desktop operating system was officially released last week. What will it mean for your network? **Page 49.**

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Audio Primer

Check out our newest audio primer on videoconferencing. Tune in to learn about the pros and cons of ISDN and IP videoconferencing, and get the scoop on Webcams, desktop conferencing, group conferencing, boardroom systems and more. **DocFinder: 6670**

Forums

Test Pilots

Our latest Test Pilot review is on the ImageStream Internet Solutions R1 router. Find out what a user had to say about its shortcomings, areas for improvement, and the savings in time and money. **DocFinder: 6671**

NetSmart

Introducing Internetworking with TCP/IP

Convergence is quickly coming to your network, and TCP/IP is at the heart of it. That's why we're offering two hands-on courses in TCP/IP Internetworking. Each session includes lectures, labs and resource materials. Get your team ahead of the game with this training. **DocFinder: 6672**

Columnists

Compendium

How does your chair rate?

Fusion Executive Editor Adam Gaffin urges us to take a good look at what we sit on all day — and then check out the ugly office chair competition.

DocFinder: 6673

Help Desk

Connectivity advice

A user asks, "I have a Motorola Surfboard cable modem (sb4100) U.K. spec and a Cisco 2501 router running 11.2 IOS. How do I connect these together and then into my hub to get broadband to all my other machines in my home?" Read Ron Nutter's advice.

DocFinder: 6674

Bleeding Edge

The weakest link in the IP network world

Edge columnists Daniel Briere and Beth Gage caution Border Gateway Protocol to watch out. Here comes newcomer Route Control with potential to level the industry playing field.

DocFinder: 6675

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News Bits

Dell undaunted by HP-Compaq merger plans

■ The planned megamerger between Hewlett-Packard and Compaq presents Dell with "more of an opportunity" than a threat, Dell CEO Michael Dell insists. Dell made the boast during his keynote address at the end of his company's DirectConnect one-day user conference last week. In response to a query about whether Compaq's planned merger with HP threatens his company, Dell cited what he termed the industry's "interesting set of reactions" to the deal. He seized on Compaq's sharp year-over-year decline in PC shipments, announced last week during the company's third-quarter financial report, and on the billions in market capitalization that the two companies have lost since they announced their intention to merge. "Somebody isn't happy. I'll give you a hint: It isn't us," Dell said. "The track record on these large mergers and consolidations is not good. We see it as more of an opportunity for us than a risk."

■ The Good The Bad The Ugly

Michael Dell, Dell CEO: "You can expect we'll be as aggressive as we've always been." Referring to Dell's pricing plans for Clariion storage products it is reselling through a new agreement with EMC.

Bill Gates brings quite a résumé to the table, but it does not include "comedic actor" . . . nor does he seem to be a natural. Nevertheless, the world's most famous software exec will play himself on an episode of "Frasier" set to air Nov. 13. Don't forget to set the VCR. ➤

Henry Schacht, Lucent CEO: "Clearly, we're not yet where we need to be, but we've built a solid track record over the last 12 months." Speaking to analysts about Lucent's latest financial results, which included a whopping $8.8 billion loss for the fourth quarter and a $16.2 billion loss for the company's 2001 fiscal year ended Sept. 30.

ILLUSTRATION DAN VASCONCELLOS

Switch maker Ennovate Networks closes doors

■ Ennovate Networks, a 4-year-old New England company developing IP Multi-protocol Label Switching switches for the edge of service provider networks, has shuttered operations. The company failed to raise additional funding and ran out of money, says Ian Mashiter, an Ennovate founder and senior vice president of strategic marketing. Ennovate rang up $81 million in funding but has not received any additional funds since a $59 million round in February 2000. The company's only announced customer, PSINet, went bankrupt earlier this year. "That was a big blow for us, obviously" Mashiter says. Ennovate's Envoy 1600 and 700 switches were in trials at two other "major" customers, Mashiter says, one of which was to turn up service in February 2002.

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Sting sings . . . Microsoft may get stung

■ Despite the glitzy kickoff provided by rocker Sting, Microsoft may wind up getting stung by its release of Windows XP. Gartner predicts that the operating system will be on only 16% of new Windows PCs purchased by the enterprise in 2002, while Windows 2000 will be on 41%. "Windows XP Professional is clearly only an incremental change from Windows 2000 Professional," Gartner analyst Michael Silver said in a report. As far as upgrading those PCs already installed in the enterprise, Silver wrote, "Most enterprises will see little return on investment upgrading existing Windows 2000 machines to Windows XP." Gartner also said XP is unlikely to drive PC sales in the last three months of 2001. Gartner projects worldwide PC shipments to decline 13% in the fourth quarter of 2001 compared with the fourth quarter of 2000.

NetRatings to buy rival Jupiter Media Metrix

■ In a move that will nearly double the number of customers it serves, Internet analysis company NetRatings plans to purchase competitor Jupiter Media Metrix in a cash and stock deal valued at approximately $71.2 million. Both companies measure audiences on the Internet. Jupiter recently compiled a list of the most heavily trafficked news sites after the terrorist attacks Sept. 11, while NetRatings presented a study on which music-sharing sites have benefited most from the decline of Napster. The two companies have been fierce rivals in the past. One part of the agreement calls for them to take no further legal action against each other in a patent infringement lawsuit that Jupiter filed against NetRatings.

Netegrity to snap up portal provider DataChannel

■ Access-management software provider Netegrity, headquartered in Waltham, Mass., says it plans to acquire Web portal software provider DataChannel, based in Bellevue, Wash. The deal is valued at $54 million. Netegrity says the purchase is intended to boost its plans to provide Web portal-based security, identity management and provisioning services to corporations.

Lernout & Hauspie fails to get a reprieve

■ Speech technology vendor Lernout & Hauspie Speech Products, with dual headquarters in the U.S. and Belgium, was declared bankrupt in Belgium last week after the commercial court there rejected the company's request for bankruptcy protection. Five liquidators, appointed by the court, have taken control of L&H and will inventory the company's assets, which will be sold off to benefit creditors. L&H did not meet the criteria for another period of bankruptcy protection, the court said.

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McAfee horns in on Norton antivirus turf

■ BY ELLEN MESSMER

SANTA CLARA — Network Associates' McAfee division next week will unveil an updated version of its antivirus management console that now exerts policy control over its main competitor, Symantec's Norton AntiVirus.

McAfee's ePolicy Orchestrator 2.5 is a management console for receiving virus-detection alerts from both McAfee and Norton AntiVirus. It can also schedule virus-signature updates and policy enforcement, such as requiring Norton or McAfee to run on the desktop or scan certain files.

Network managers say they favor having a single console to control Norton and McAfee. For Network Associates, it's a way to try to elbow aside its arch rival.

"Yes, it is a way to show the usefulness of having McAfee in organizations that also have Norton with the hope we will be preferred in the future," says Ryan McGee, McAfee's group product marketing manager.

About 70 million PCs run McAfee, although approximately 20% of McAfee's corporate customer base also uses Norton AntiVirus.

A third competitor, Trend Micro, had been the only antivirus software vendor to market a management console to manage software other than its own.

McAfee's ePolicy Orchestrator 2.5 is available for Windows NT and 2000, and requires the installation of client agent software on Windows 95, 2000, NT or XP to enforce the manager's policy instructions for the desktop antivirus software. The earlier version of Orchestrator knew how to recognize that Norton was running on a desktop, but couldn't control its use.

Orchestrator can now control McAfee and Norton equally through one screen view. "Before this utility, we were blind," says Lance Fahey, client systems specialist at Manpower, a personnel-services agency in Milwaukee.

Manpower's IT policy mandates that McAfee antivirus software be used by 7,000 of its employees in its offices connected via a frame relay network. But Manpower's business also includes 1,200 independently owned franchises that are allowed to use whatever antivirus software package they choose. Many of those offices buy Norton AntiVirus, says Fahey.

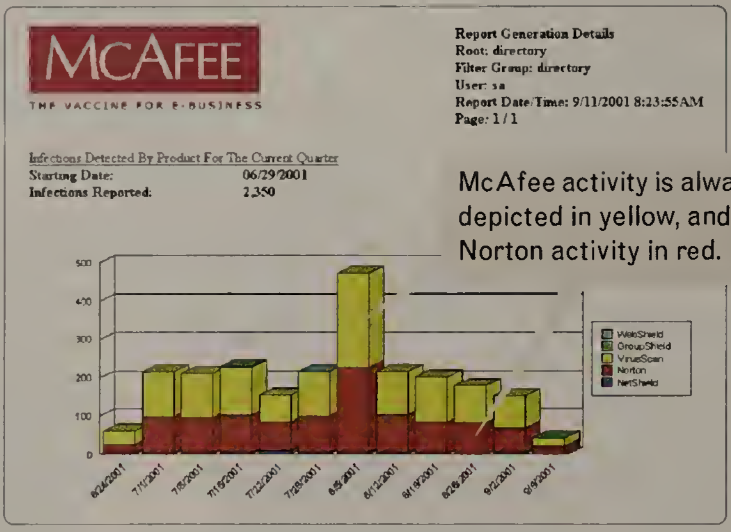
Fahey will add the Orchestrator 2.5 agent code to the franchise offices on desktops with Norton AntiVirus to be able to enforce virus-signature updates. "It's opening a door for me to see what's going on," he says.

The ePolicy Orchestrator 2.5 costs $28 per management node.

McAfee: www.mcafee.com

McAfee ePolicy Orchestrator 2.5

The McAfee antivirus management console now manages the competing antivirus software, Symantec Norton AntiVirus, in addition to McAfee's own.



Report Generation Details
Root: directory
Filter Group: directory
User: sa
Report Date/Time: 9/11/2001 8:23:55AM
Page: 1 / 1

Infections Detected By Product For The Current Quarter
Starting Date: 06/29/2001
Infections Reported: 2,350

McAfee activity is always depicted in yellow, and Norton activity in red.

Microsoft, Sun propel Web services

■ BY JOHN FONTANA

Microsoft and Sun last week tried to chip away some of the hype from Web services by laying out how and when they plan to deliver actual tools and infrastructure components for taking advantage of the latest advance in application technology.

But experts still say Web services, which are designed to let customers create and use applications by stitching together software components on the fly, are probably at least a year away from having any major impact on enterprise network users.

"You can talk about the hype and come up with examples of the technology, but what they have to do first is arm developers who can start building Web services that are real," says Evan Quinn, an analyst with Hurwitz Group.

Indeed, Microsoft, at its Professional Developers Conference in Los Angeles, distributed the final beta-test versions on two foundation components of its .Net strategy for building and executing Web services.

The foundation components are Visual Studio.Net and the .Net framework, both of which Microsoft hopes to ship by year-end. Visual Studio.Net is the development suite for building Web services that use a set of standard protocols based on XML, including the Simple Object Access Protocol and the Web Services Description Language.

The .Net framework is the run-time environment for executing Web services built using Visual Studio.Net. The framework also supports applications written in any one of 26 development languages.

"We use the framework and Web services to integrate systems on the manufacturing side of our business," says Fred Durham, CEO of CafePress.com, which maintains 200,000 individual online storefronts and prints original logos and artwork on T-shirts offered through those storefronts. "We were on Java, but we were cobbling things together so we needed a framework to operate within. We looked at WebLogic and

See Web services, page 68

Protocol proposals

Microsoft last week unveiled a set of XML-based protocols for security and routing designed to extend the Simple Object Access Protocol (SOAP). The protocols add the transaction-based computing capabilities needed for Web services to support enterprise-class apps.

Specifications	Description
WS-Security	Provides credential exchange, message integrity and message confidentiality using the World Wide Web Consortium's XML Signature and XML Encryption specifications.
WS-License	Describes how to encode X.509 certificates, Kerberos tickets and arbitrary binary credentials for use with WS-Security.
WS-Routing	Governs the asynchronous routing of SOAP messages over a variety of transports, including TCP, UDP and HTTP.
WS-Referral	A protocol that enables the routing path of SOAP messages to be dynamically configured.

■ THIS WEEK'S QUESTION:
Umang Gupta made a name for himself in the database industry during the mid-1980s after founding Gupta Corp. Which company does he now lead as CEO?

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SENIOR EDITOR: JOHN COX
(978) 834-0554; Fax: (978) 834-0558
SENIOR EDITOR: DENI CONNOR
(512) 345-3850; FAX: (512) 345-3860
SENIOR WRITER: APRIL JACOBS, (603) 742-1789
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(703) 917-8621; Fax: (703) 917-8622
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Nortel and IBM get chummy over VoIP

■ BY PHIL HOCHMUTH

Nortel last week said it has ported its call center products to IBM's application server and database platforms and has tapped Big Blue's integration arm to install those products and other Nortel voice-over-IP gear in large companies.

The agreement lets users deploying Nortel's Symposium call center software use IBM's WebSphere application server and DB2 database to integrate other IT resources. The partnership also makes IBM Global Services Nortel's preferred integrator for installing IP-based telephone and call center systems.

IP gets the call

By 2003, the worldwide market for IP-enabled PBXs will reach $1.3 billion, with 28% of the market going to IP call center installations in enterprises and call center application service providers.

SOURCE: IDC

Symposium servers connected to Nortel PBXs or IP PBXs make it possible to route customer calls to agents based on their skills (such as product expertise) while delivering customer data to agent desktops from back-end customer relationship management (CRM) applications.

WebSphere, the first application server to which Nortel has tied Symposium, should make it easier for customers to integrate back-end CRM systems from companies such as Siebel and SAP. The link should also make it possible to speed delivery of customer information, Nortel says.

Existing customers using Symposium on standard SQL- and Open Database Connectivity-compliant database servers (such as Microsoft SQL Server or Oracle) will still be support-

See Agreement, page 69

Tivoli aims to plug security holes

Company completes security management portfolio with two products, upgrade.

■ BY DENISE DUBIE

AUSTIN, TEXAS — IBM software subsidiary Tivoli Systems last week unveiled products to automate user approval and authorization, and help network managers find and plug security holes.

The company introduced Tivoli Identity Director, software to manage and automate user access rights and provisioning, and Tivoli Intrusion Manager, software that filters enterprise security events and alerts net managers to potential risks. Tivoli also enhanced its Policy Director authorization software to support e-business applications from IBM, SAP, Plumtree, BroadVision and BEA Software.

Hurwitz security analyst Pete Lindstrom says Tivoli's three releases address security issues that have slipped through the cracks to date. These include managing a user's entire online life cycle from creation to termination; handling security alerts and targeting potential threats; and managing authorization rights across Web and legacy networks.

"The dirty little secret in the security world is that there's a plethora of user accounts," Lindstrom says. "Identity Director gives users the proper management capabilities to control who has access to what resources."

With Identity Manager, Lindstrom says, Tivoli competes with Access360 and BMC Software, and Policy Director competes with products from the likes of Netegrity.

Identity Director software is installed on a server and comes with a Lightweight Directory Access Protocol-enabled database to hold user data, but it will work with other directories.

When prompted from a human resources application to create a user account, the software will automatically assign the applications, directories, network, Web and e-mail tools the new user can access. The software will also immediately deny access to all those resources when a user account is terminated. It can even send an e-mail alerting the appropriate person to deactivate a former employee's identification badge, restricting access to the company's building.

Tivoli's second new product, Intrusion Manager, is a spinoff from Tivoli's Risk Manager software. The company says the stand-alone software is designed for small companies and is limited to managing the security on up to 20 devices, including servers, firewalls, VPNs and routers. The product gives users a single console view of all security events and alerts coming in on the network from disparate sources. The software correlates the alerts and can determine if numerous events are being generated from one source of attack.

"There are all kinds of [intrusion-detection system] alerts happening, but no one place to make sense of them," Lindstrom says. "Tivoli is giving users a place to manage security events and software to help stave off potential attacks."

Intrusion Manager also provides a vulnerability assessment that Tivoli says will help users proactively change their networks to prevent attacks or plug security holes. The software performs routine checks on network devices and applications, looking for unpatched systems, and then offers users possible resolutions and locations to find the necessary patch. The software taps into a "security hole" database maintained by IBM that is updated monthly and immediately when a known virus is released.

Additionally, the enhancements in Policy Director 3.8 extend the product's security capabilities from the Web-based applications and systems into the enterprise network, Lindstrom says. The added support further integrates the Web and legacy systems for the company, he says, and provides one policy-management tool that works across an entire infrastructure.

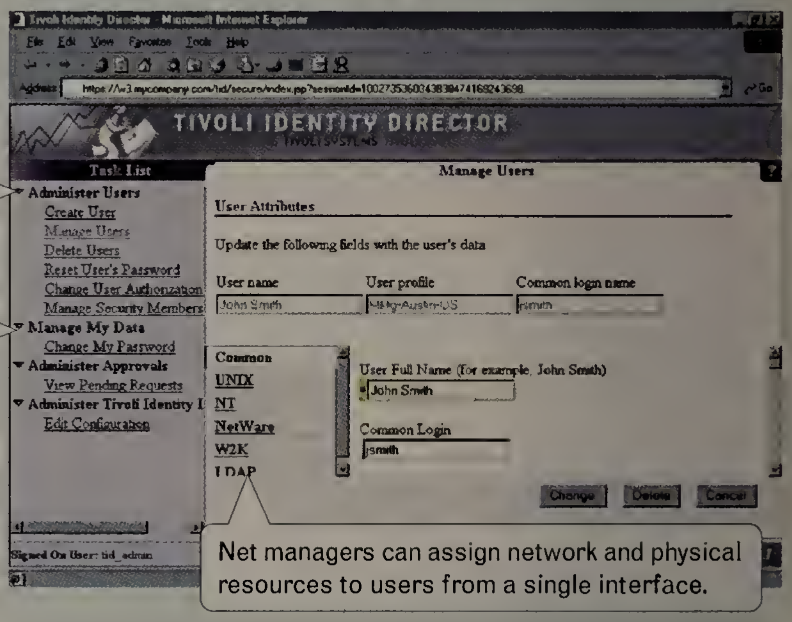
All the products are available now. Tivoli Intrusion Manager runs on Windows NT, Solaris, Unix and Linux, and costs $49,100. Identity Director and Policy Director are priced per user, with discounts available as the number of users increases. ■

Having proper identification

Tivoli Identity Director software automates the process of adding, deleting and changing user accounts.

Network administrators can manage the online lifecycle of users from creation to deletion with this software.

Users, with proper authorization, can access the software to change or edit their passwords without calling the help desk.



https://w3.mycompany.com/tid/secure/index.jsp?sessionId=1002735360343838474168243698

Update the following fields with the user's data

User name: John Smith

User profile: Mktg-Austin-US

Common login name: jsmith

User Full Name (for example, John Smith): John Smith

Common Login: jsmith

Net managers can assign network and physical resources to users from a single interface.

Redback steps into edge router game

SE 800 takes on Cisco, Juniper, Unisphere.

■ BY TIM GREENE

SAN JOSE — Redback Networks is shipping a new edge router it claims can supply 99.999% reliability, which service providers demand and which also is important to large firms.

To accomplish this, the SmartEdge 800 Router compartmentalizes both hardware and software to decrease the likelihood of an entire router failing even if some elements go down.

The chassis has two route-processing cards that just process route updates and calculations. Packet-forwarding processors are separate on each line card in the chassis. If a route-processing card fails, each line card can continue to forward packets until the other comes online, says Ravi Chandra, Redback's vice president of IP software.

Software functions are also separated. Each process such as Border Gateway Protocol (BGP) or Open Shortest Path First (OSPF) is a software module and uses its own memory. So if there is a failure of the BGP software module, OSPF and protocol independent multicasting is unaffected. BGP can be restored without taking the others down.

The SmartEdge 800 Router can be used as an edge router, taking in access links from individual sites and aggregating them for OC-12 or OC-48 uplinks to the core network.

Redback faces competition from Cisco, Juniper Networks and Unisphere Networks, says Zeus Kerravala, a research director at The Yankee Group. He says the Redback box might have technological advantages, but the others may succeed because they offer devices that span from the edge to the core of major networks. This could offer management

See Redback, page 14

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COMPAQ
Inspiration Technology

Instantis touts speedy Web apps rollouts

In SiteWand 3.0, vendor is adding Web services support to its software palette.

■ **BY ANN BEDNARZ**

SUNNYVALE, CALIF. — A typical trade-off that companies in the market for enterprise software face is speed of deployment vs. degree of customization. Instantis says companies can have both with its component-based approach to application design.

For each customer, Instantis combines different database, workflow and e-mail messaging processes to create customized Web applications that address the particular tasks a company wants to automate, such as sales or marketing functions. These Web applications capture information coming into a Web site, store the data in a database and then take action — such as sending an e-mail message — based on user-defined rules.

Instantis builds the applications on its SiteWand platform. SiteWand applications can be integrated with users' existing applications and infrastructure. And with release of SiteWand 3.0 this week, Instantis has added support for Web services to its development platform.

The building blocks of SiteWand are what Instantis calls "engines." Each engine handles a general-purpose transaction, and Instantis links these engines together to create full applications. An average deployment consists of 10 to 50 engines that gather and disseminate customer data.

The engines receive input via standard protocols such as HTTP, Simple Object Access Protocol (SOAP), XML or custom APIs. When a request comes in, the engines can respond by delivering a Web page or e-mail notification; updating a database; performing a processing function such as connecting to a credit-card payment gateway; or sending a SOAP, XML or API message to another application.

With SiteWand, companies pay only for the functionality they need, says Instantis CEO and founder Prasad Raje. With its engine-assembly approach, Instantis can deploy applications 10 times faster than it would take to write new code for each application, he says.

"It was definitely lightning speed," says Brad Eisenstein, director of hosting sales operations at XO Communications, of his firm's implementation.

When the broadband services provider approached Instantis, it had a list of sales leads numbering in the hundreds of thousands. Ten days later, Instantis delivered an operational lead management system that tracks and feeds leads to XO salespeople. Eisenstein estimates XO saved "tens of thousands of dollars" with SiteWand, given the time it would have taken internal staff to deal with the massive amount of data and create an interface to work with it.

Part of the reason such a rapid rollout was possible is that SiteWand is not tied to XO's other customer relationship management applications. For now it handles only the task for which it was designed: to process the volume of sales leads.

"What you accomplish [with SiteWand] is relatively simple," says Bob McCullough, a Hurwitz Group analyst. "The fact that you can do it in a less painful manner is where the advantage is."

With the addition of Web services support, SiteWand users can expand their transactional boundaries.

For example, a bank that had outsourced some of its sales efforts to a telemarketing company needed a way to feed qualified leads from the telemarketing company back into its SiteWand-based, lead-tracking and salesforce-automation system. Using Web services, SiteWand pulled those leads in XML format from the outside telemarketing company's system and into the bank's system.

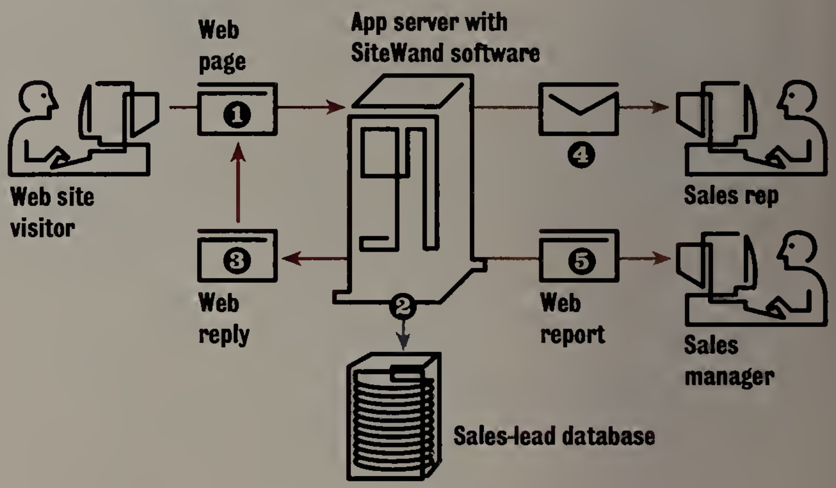
Instantis is "pushing the envelope with XML," McCullough says. The idea of being able to dynamically assemble a range of Web services from different places is not quite a reality because there's not enough Web services content available yet, he says.

SiteWand 3.0 is available now as a hosted service or for on-site deployment. Pricing starts at $2,500 per month for five-engine hosted system.

Instantis: www.instantis.com

SiteWand software for sales management

XO Communications turned to Instantis for help processing sales leads, distributing them to appropriate sales reps, and tracking these efforts.



① A site visitor submits a Web form requesting product information.

② SiteWand captures prospect data from the Web form and stores it in a sales-lead database.

③ For the customer, SiteWand generates an e-mail or Web-based message acknowledging receipt of the inquiry.

④ For sales reps, SiteWand sends notification e-mails about new sales leads in their territory.

⑤ For sales managers, SiteWand reports on the volume and status of sales inquiries.

Shake-up at RLX

Market downturn hits server blade maker.

■ **BY APRIL JACOBS**

HOUSTON — Start-up server blade maker RLX Technologies said last week it would restructure itself in the wake of a downturn in the overall server market, and named a new president as part of its plan.

RLX gained renown in the fast-growing but tiny blade market by being the first to ship products based on Transmeta's low-power Crusoe processor. Server blades pack more server power into less space than conventional servers.

Ex-Compaq exec Gary Stimac steps down as RLX CEO.

The company had been led by a team of industry veterans, many of them from Compaq. Some of that changed last week, when Michael Swavely, former of president of Compaq's North America operations, stepped aside as president and COO and was succeeded by Pat Collins, formerly a vice president at Dell. Gary Stimac, also a former executive at Compaq, will remain as chairman of RLX, but a spokesman for RLX said Stimac would no longer serve as CEO. A replacement has not been named.

Collins says RLX is still in good financial shape with "plenty of cash in the bank," but it was set up to operate in a much brighter economy. One of its main problems has been its focus on selling to service providers, a strategy that did not turn out well when those players began encountering financial problems. Instead, says Collins, RLX will change direction, focusing on application-specific offerings. He did not offer details, except to say that RLX could offer bundles of server blades with applications and management features.

RLX isn't the only company struggling in the server market. John Humphreys, an analyst with the market research firm IDC, says initial estimates show third-quarter server shipments fell 2% worldwide compared with the third quarter of 2000, causing steep revenue declines of 22%. In the U.S., server shipments fell 14% from the same quarter last year, causing a 30% decline in revenue for server makers.

Humphreys says RLX is part of a growing area in the server market, but one that isn't growing as fast as some would have liked. "Any new segment is going to have difficulty in an economy like the one we have now," he says, noting that IT managers may be wary of investing in new technologies.

RLX: www.rlxtechnologies.com

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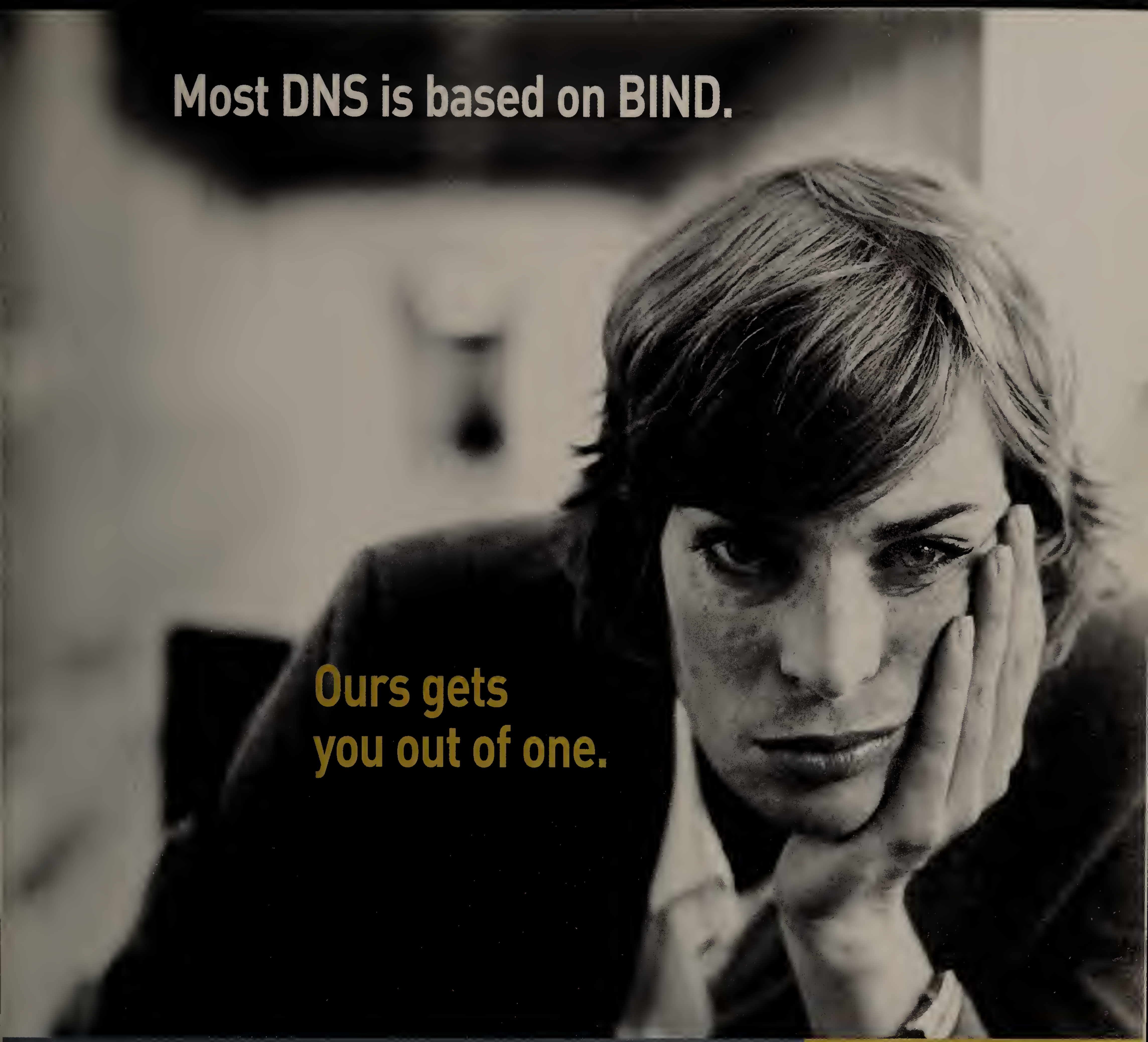
Corrections

■ The story "Russell keeps workers tuned with ERM," (Oct. 22, page 29) misidentified Russell's vice president of special services. His name is Paul Porter.

■ The chart in the story "A flooded field for IPSec-based VPNs is good for users," (Oct. 1, page 47) should have stated performance numbers for the Cisco 7140 VPN Router as 80M bit/sec for best-case packet flow, 38M bit/sec for Internet mix packet flow and 8M bit/sec for worst-case packet flow. The price/performance ratio in dollars per megabit is $243.42.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ULTRA DNS

Collaboration

continued from page 1

for International Development and the Peace Corps.

"Today, you've got 40 agencies with multiple ways of communicating. It looks like a spaghetti bowl," says Fernando Burbano, CIO of the State Department and the lead architect of the overseas Web collaboration system. "We want to go to a virtual knowledge management system that's secure. It's going to be available at the classified and unclassified levels."

The overseas Web collaboration system entered the limelight this fall after the worst terrorist attacks ever in the U.S. State Department officials say this system is the furthest along in terms of providing the level of interagency coordination needed to respond to new threats such as the recent outbreak of anthrax.

"The requirement for interagency collaboration and cooperation is paramount, not just overseas but domestically," says Anthony Muse, deputy CIO of the State Department. "Our project has been in the works for a year and half. We're not a Johnny-come-lately."

In recent weeks, Burbano has briefed two Senate committees, the White House Office of Homeland Security and the Office of Management and Budget on the design and status of the overseas Web collaboration system. While this system was designed for counterterrorism initiatives, it also supports crisis coordination, law enforcement, trade relations and human rights efforts.

"Even though [this system] is for foreign-affairs agencies, it's the same 40 agencies that need to communicate domestically," Burbano says. "The same software and hardware could be used."

The CIOs of the 10 primary foreign-affairs agencies drafted the architecture and requirements for the overseas Web collaboration system. The system was funded last April, when Secretary of State Colin Powell allocated $17 million for a prototype and pilot test of the system as part of his agenda to upgrade the State Department's network infrastructure.

In June, the State Department awarded three contracts to prototype the Web collaboration system. The winning contractors were Science Applications International Corp. (SAIC), which teamed with PricewaterhouseCoopers; SRA International, which teamed with IBM; and Accenture, which teamed with General Dynamics and Booz-Allen & Hamilton.

The State Department plans to select a winning contractor in January and to conduct a five-month pilot test of the system at posts in Mexico and India starting in May. The pilot test will include 2,400 users from the State Department and other agencies.

The State Department will run the Web collaboration system on its OpenNet Plus architecture, which consists of 30,000 Pentium desktops and servers running Windows NT. The system will support document sharing, instant messaging, chat rooms, whiteboarding and advanced searching.

"The big thing here is knowledge management. This isn't just a network," Burbano says. "What is knowledge management? In my view, it's getting the right information to the right people at the right time regardless of their location to support decision-making in a distributive fashion."

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The system will let users create communities of interest across agencies. Users from outside the State Department will access the system via a Web browser, and the system will be secured with public-key encryption, firewalls and intrusion-detection software.

"Why do we need knowledge management at overseas posts or domestic locations? It's important because people rotate, and we lose know-how. We've got to capture best practices. And we need to find who else is working on something and who has the expertise," Burbano says.

A classified version of the overseas Web collaboration system, also under development, will use the same hardware and software as the prototypes, Burbano says.

Industry bidders say the system is at the forefront of applying knowledge management and collaboration techniques.

"We do our own knowledge management here, but we're pushing the envelope with what we're doing in the State Department," says Meg McLaughlin, a partner at Accenture.

"They are focusing on the use of commercial, off-the-shelf software, and they are making the commitment to modify their business practices instead of modifying software," she adds.

Dean Thorsell, vice president of SAIC, says most federal agencies only have basic collaboration tools such as e-mail. "Just having access to shared documents over the Web is something that really takes [users] to the next step," he says.

Industry sources say the overseas Web collaboration system could cost from $30 million to more than $100 million, depending on the number of software tools selected and how they are deployed.

Deployment is not funded until the government's 2004 fiscal year, which begins in October 2003. But State Department officials say they could move up the schedule if money is allocated sooner.

"If [Congress] moved up some money to this year and to FY03, maybe we could speed up the worldwide deployment," Burbano says. "Those things are being looked at." ■

International Web collaboration under way

The contract award and pilot test for a new Web system evolved from the U.S. Embassy bombings in Africa.

August 1998
Bombings of U.S. embassies in Kenya and Tanzania.

January 1999
An accountability review board led by retired Admiral William Crowe issues a report recommending improved information-sharing among agencies operating overseas.

November 1999
Overseas Presence Advisory Panel issues a final report recommending the development of a Web-based system to support collaboration and information-sharing among 40 agencies operating overseas.

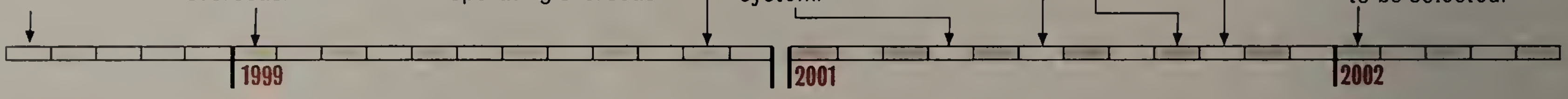
April 2001
State Department receives $17 million to prototype and pilot an interagency collaboration system.

June 2001
Three contractors selected for prototype phase: Science Applications International Corp., Accenture and SRA International.

September 2001
Terrorist attacks in New York City and Washington, D.C. bring overseas collaboration system new visibility.

October 2001
Two Senate committees, White House Office of Homeland Security and Office of Management and Budget, are briefed on overseas collaboration system.

January 2002
Winning contractor to be selected.



May-September 2002
Collaboration system to be tested by 2,400 users in Mexico, India and Washington, D.C.

Fiscal Year 2004
Collaboration system funded for rollout. No funding for system in FY03 budget.

Redback

continued from page 10

advantages that override the features of the Redback gear.

The SmartEdge 800 Router also needs to support services such as IP VPNs and firewalls so that service providers can use it as more than just an aggregation device, and that is where reliability will come into play, he says. If the box directly connects with users' networks, a failure would mean service outages. "Edge routers haven't been known for their reliabiliity," he says.

The chassis is the same as Redback's SmartEdge 800 Transport. It has 14 slots, and the SmartEdge 800 Router uses two slots for redundant route-processor cards and 12 for line cards. The line cards each have switching capacity and forwarding tables, and each card is connected to all the others via a passive backplane.

Redback uses its own network processor with application-specific integrated circuits to support speed and the ability to reprogram the device to support new protocols. A fully loaded chassis has a switching capacity of 60G bit/sec.

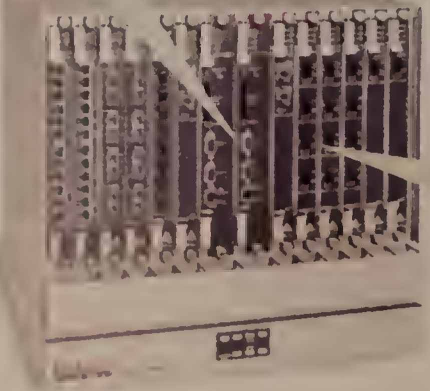
Redback is shipping 100M bit/sec and 1G bit/sec Ethernet cards as well as OC-48, and concatenated OC-3 and OC-12 cards.

Price for the chassis, route processor and two line cards is about $150,000 and can cost more than $800,000 for a fully loaded box.

Redback: www.redback.com

Redback shoots for reliability

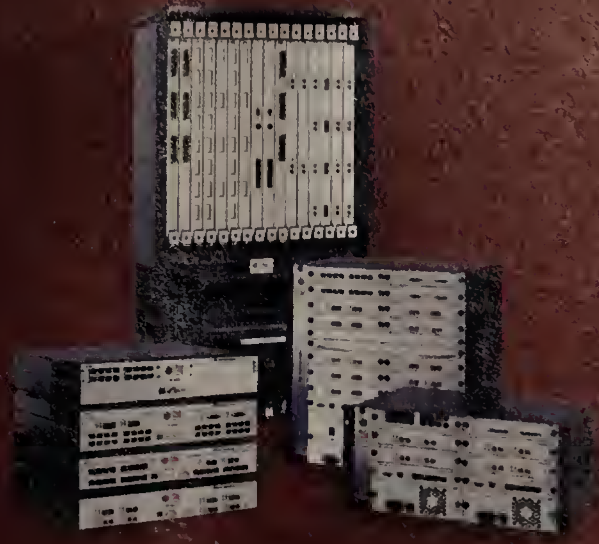
Redback Networks' SmartEdge 800 Router claims 99.999% reliability by virtue of software that processes routing protocols in separate modules so failure of one module doesn't affect the others. Packet processing hardware is also segregated to keep the box running.



These redundant route processor cards perform route calculations and route updates only.

Separate packet-forwarding processors on each line card can continue forwarding packets when a router processor card fails until the backup comes online.

GIGABIT ETHERNET, SONET, ATM. SHOOT, IF YOU WANTED A NETWORK MADE OF HAM, WE COULD PROBABLY CONNECT TO IT.



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Q&A

Your take
Network executives share their wisdom

State Department CIO Burbano revamps network in time of war

Historically a laggard in the use of IT, the U.S. State Department has embarked on a massive network upgrade that will provide Internet access on every desktop in 260 embassies and consulates around the world. The project is coming none too soon, given that the State Department faces unprecedented information-gathering challenges in the war against terrorism. Network World *Senior Editor Carolyn Duffy Marsan interviewed CIO Fernando Burbano about the status of the State Department's network upgrade, how it's changed since Sept. 11 and his advice regarding network security.*

What is the status of the State Department's network architecture and modernization efforts?

[Our current OpenNet architecture consists of] the 30,000 modern desktops and servers that are Pentium-based [and run] Microsoft software. We have Cisco routers and so forth. Those systems replaced approximately 600-plus Wang minicomputers, the famous ones we had for almost 30 years.

OpenNet was designed to be an intranet. It has sensitive but unclassified information, and so [the department] didn't want to hook it up to the Internet for Web access. We have Internet e-mail capabilities at all 30,000 desktops, but Internet Web access is available on stand-alone PCs or stand-alone LANs, not hooked up to OpenNet.

When I came onboard, [the department was] prototyping to build a separate network for Web access. I took a look at the network architecture and said: "Yes, we do have to increase security because the Internet is like Swiss cheese. It's got holes. And we have to make sure that we mediate that risk. But we can use a risk-management philosophy as opposed to a risk-avoidance philosophy."

What we did was put out extra security so we could merge the Internet Web access with OpenNet. We're going to use the same servers, desktops, software and routers. We don't have to replicate any of that. That's what we're doing with OpenNet Plus. Eighteen months from now — unless something unforeseen happens like disruptions of shipments or financial problems on [Capitol] Hill — we plan to upgrade all 30,000 systems plus add 2,000 new systems. Three organizations are in production: the IRM Bureau, the Economic Bureau, and we just hooked up our first overseas post, which was Nicosia, Cyprus. Another 50 posts are in different stages of cutting over.

What are you doing to upgrade your other network infrastructure, which carries classified communications?

We are also upgrading our classified LANs. We have 50 or so older Banyan LANs that allow classified e-mail but not classified Web access. They're not hooked up to the Internet, but they act as an intranet with a Web browser. So you can use SIPRnet [the Defense Department's Secret IP Router Network] or Intellink [the intelligence community's classified network]. We've been replacing [the old LANs] with new classified LANs. It's the same platform as OpenNet — all Pentium-based, running Microsoft software. We've had this program under way for two years, but it was very dependent on money. Classified systems are not your typical off-the-shelf stuff. They need special shielding, special cabling, special shipments that have to be carried in special ways, and special installation, all requiring top secret and above clearances. It's very expensive. Secretary [Colin] Powell gave us $200 million to complete our project for classified LANs. He gave us $110 million for OpenNet Plus.

By the end of this calendar year, we will have approximately 60 modern classified LANs in 60 posts overseas. Domestically, we already have it. In 24 months, we'll have new classified LANs at virtually every post. You've got to have special physical requirements to put in a classified network, and not every building has that. So where it's feasible and where it's needed, we'll have it with this project.

Secretary Powell has said his goal is for every employee of the State Department around the world to have Web access. What progress have you made in that area?

We have Web access in all embassies and bureaus. I'll give you an example: The Economic Bureau had 190 OpenNet workstations, which had the intranet with Internet mail only. They had 18 stand-alone Internet Web access workstations that were in pooled areas. Once we upgraded the network security and desktops, they went from having Web access capability for 18 employees to having the full 190 employees. So it was a tenfold increase. That's going to be representative of what's happening out there.

How has your network upgrade effort changed since Sept. 11?

We were already accelerated, and there's only so much acceleration you can do. We cut [installation] times on OpenNet Plus and the classified LANs. Originally, they were scoped out to take four to five years, and we cut that down to 18 months for OpenNet Plus and 24 months for classified LANs. Right now, we're on schedule. But we're trying to see if we can speed up even more. We've already maximized network security. We take that very seriously. So there wasn't any additional security needed.

How has the State Department put its upgraded network infrastructure to use since Sept. 11?

We're able to communicate sensitive information at 30,000 desktops. We didn't have that before. By the end of the year, we'll have 60 modern classified LANs, where we're able to maximize the use of other intelligence community links and databases from SIPRnet and Intellink. Plus, we'll have classified e-mail. We've always had secure voice, fax and cable. So we've always had secure communications at every post. Now it's just different flavors. At the desktop, it's more efficient.

Before your arrival as CIO, the State Department had a long history of being a laggard in terms of IT. How did you turn that situation around and receive the management and financial support you needed to conduct one of the largest IT upgrades going on in the federal government?

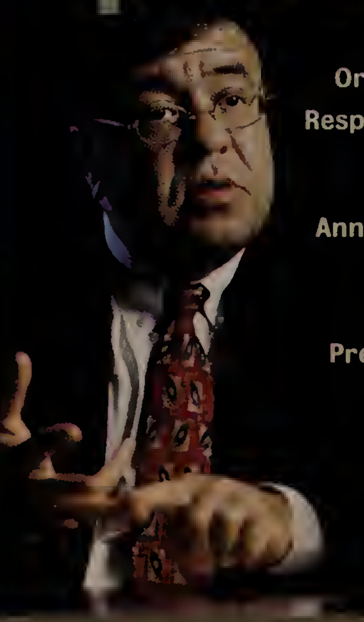
You have to get your secretary to support you, which wasn't hard for me because Secretary Powell is an avid IT supporter. Before he came here, he was on the board of directors at AOL. He's a big user himself. He's got his own laptop. He's got DSL at home. He does online banking transactions and trades. So we have an IT-interested and savvy secretary who knows the importance of IT. Also, at the Pentagon, he was a big supporter of IT.

Your network infrastructure budget is being doubled this year. How do you ensure the money is well-spent and there is

See **State Department,** page 69

Getting personal

Fernando Burbano



Title:	CIO
Organization:	U.S. State Department
Responsibilities:	Oversees IT policy and operations for an organization with 30,000 employees and 260 locations.
Annual budget:	$538 million
IT staff:	3,000 (including contractors)
Tenure:	Since May 1998
Previous jobs:	Director of IS at the National Library of Medicine from 1993-1998; Director of the Office of Information Resources Management at the Peace Corps from 1990-1993.
Education:	MA in Public Admin., American University; MS in Information Resources Mgmt., Syracuse University; BA in Information Systems, Louis University.

!

- Follow Burbano's career path, which led him to become CIO of the State Department.
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Network connections

An Executive Report Produced
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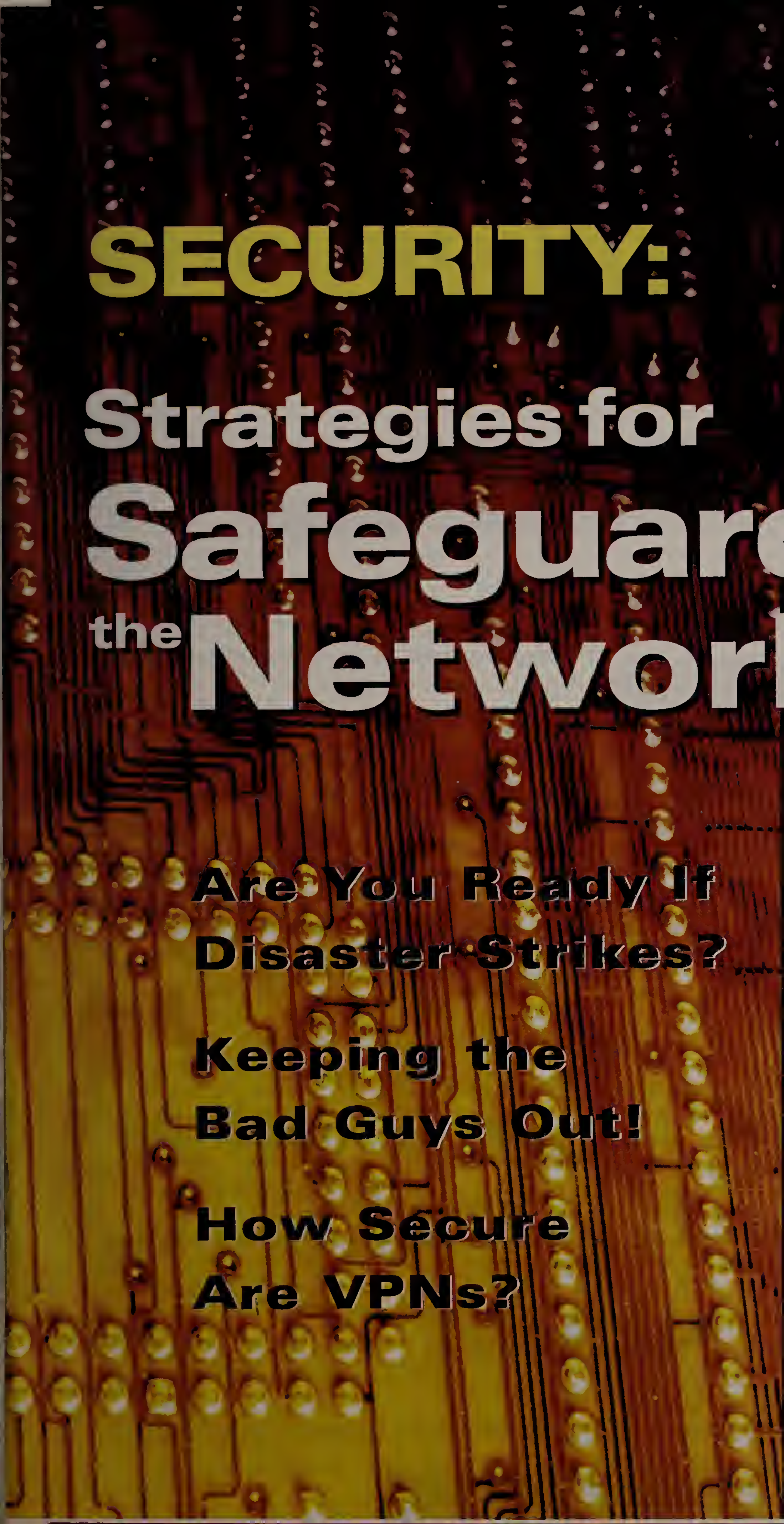

SECURITY:

Strategies for Safeguarding the Network

Are You Ready If Disaster Strikes?

Keeping the Bad Guys Out!

How Secure Are VPNs?

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—Information Security Magazine, September 2001

"A formula for earning our Editors' Choice."
—PC Magazine, September 25, 2001

"Easy to install and, more important, easy to restore."
—Network Computing, May 14, 2001

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Nokia earned its reputation for excellence as the world's premier provider of mobile communications, and is now an acknowledged leader in Virtual Private Networking as well. According to a June 2001 IDC study, Nokia's sales growth of 430% was the fastest in the worldwide firewall/VPN appliance market in 2000.

Nokia's patented IP Clustering technology has been central to the success of its dedicated VPN gateway lineup. Nokia has also partnered with best-of-breed application providers to deliver a full lineup of integrated firewall/VPN appliances. The breadth and depth of Nokia's standards-based offerings are able to meet the intranet, extranet and remote access needs of virtually any organization.

IP CLUSTERING FOR UNPRECEDENTED RELIABILITY

Nokia's patented IP Clustering technology provides unprecedented levels of reliability and scalability. In a nutshell, IP Clustering allows multiple gateways to function as a single unit, with a single IP address.

- IP Clustering makes Active Session Failover™ possible. If any gateway in a Nokia VPN cluster becomes unavailable for any reason, the remaining gateways maintain all active sessions, as well as their related security associations, seamlessly and transparently. There is no disruption in service, so Nokia gateways can be added to or removed from a cluster at any time, for true upgrade-on-the-fly convenience.
- IP Clustering also delivers true Dynamic Load Balancing™ Each gateway in a Nokia VPN cluster is assigned a traffic load based on its individual capacity, so Nokia gateways of any size can be clustered with any other, as required.

UNPARALLELED COST SAVINGS

VPNs provide low-cost remote access to corporate networks as an alternative to expensive long-distance calls and dedicated lines. Nokia VPN solutions go several steps further:

- Nokia's VPN Policy Manager has an intuitive interface that helps administrators organize complex IPSec policies and monitor intricate network topologies. Policy changes can be uniformly deployed across networks including hundreds of gateways and clients with a single touch.
- Nokia dedicated VPNs integrate with existing investments and support all common Internet security protocols including Layer-2 Tunneling Protocol (L2TP), Point-to-Point Tunneling Protocol (PPTP) and IPSec. They can be used with advanced security technologies like RSA SecurID® tokens, smart cards and external Certificate Authorities, and will work with next-generation IP products as well.

Nokia's VPN Family

- Nokia VPNs are easily and rapidly deployed in existing networks. Their integrated security applications are preconfigured to facilitate plug-and-play installation by nontechnical personnel. They're even designed to save space in the equipment room.
- The unprecedented reliability and scalability of Nokia VPNs means fewer emergencies, as well as reduced opportunities for downtime and lost revenues.

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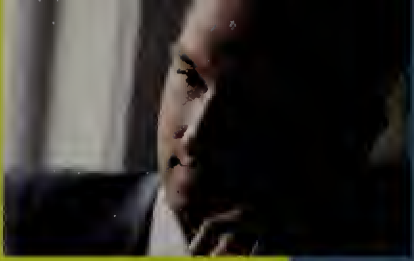

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Let Freedom Ring Securely

At the Interop show in Atlanta this past September, I was host of *Network World* Live TV. My job was to conduct short interviews with executives from more than 50 companies. At least half of them were selling security technology and services.

On the user side of the equation, study after study shows security issues at or near the top of network managers' lists of challenges and concerns. Research companies, likewise, predict heavy spending for all types of security technology. Market research firm International Data Corp., for example, says user spending on virtual private network (VPN) firewalls will double every two years for the foreseeable future.

Of course, the entire world is more security conscious following the events of this fall. But the real reason behind this continued surge in security spending is the changing nature of enterprise IT.

The defining characteristic of the unfolding e-business infrastructure is the external reach of enterprise networks. More and more network users come from outside the walls of the enterprise – from customers and suppliers in particular. This increasingly external-facing nature of networks makes systems more vulnerable to attack due to the increased points of network entry. Add to this the greater reliance upon Internet technologies and you have a host of potential security problems.

Fortunately, as you will see in the pages of this special report, your options for securing the network and enterprise data are many. By all means, continue building the e-business infrastructure that will create freedom of data access to internal and external users alike. Just remember that the price of freedom is eternal vigilance.

– Bill Laberis
Project Manager

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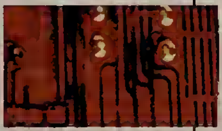


Network connections

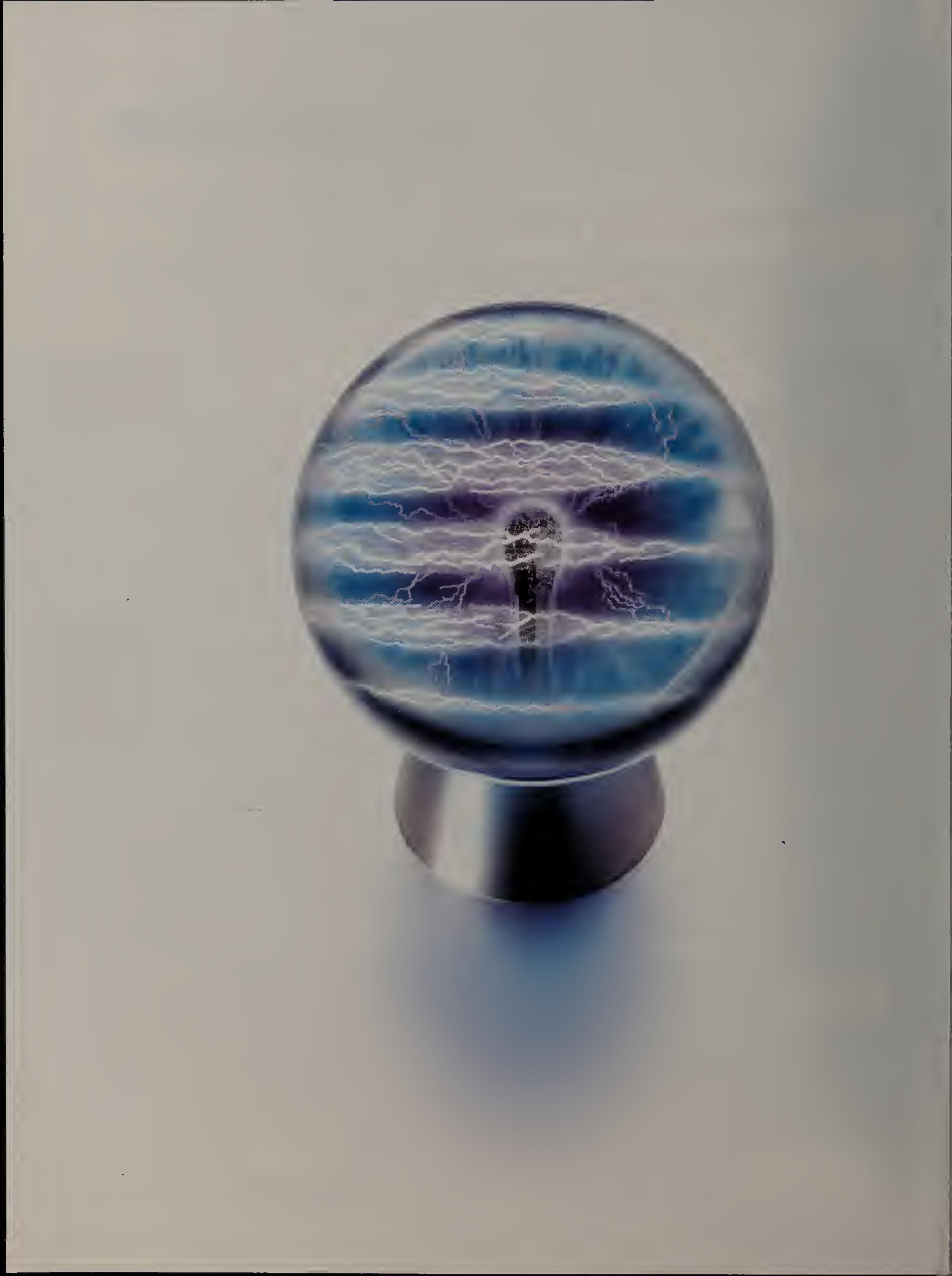
MANAGER, CUSTOM MEDIA SOLUTIONS, NETWORK WORLD, INC.
Shaun Budka, sbudka@nww.com

PROJECT MANAGEMENT:
Bill Laberis Associates
www.laberis.com

MANAGING EDITOR:
Kathleen Gow

DESIGN:
Suzanne Peterman, TopDog Design
www.topdogdesign.com

NetworkWorld



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Are You READY If Disaster Strikes?

BY JON WILLIAM

The shock and destruction of a disaster event" – whether caused by a terrorist attack, a fire or some natural calamity – tends to distract attention from the actual work done to recover business operations or mitigate the vulnerability of organizations to potential disasters in the first place. In most companies, the job of thinking the unthinkable and preparing methods and strategies for disaster avoidance and recovery tends to fall on the shoulders of the IT organization.

Those involved in disaster recovery planning know that, while every contingency cannot be anticipated in disaster recovery plans, companies that have plans in place tend to survive to do business another day. And those that don't are likely to disappear within five years.

Successful disaster recovery is closely linked to time-to-data: a metric describing how quickly networks, systems, applications and their data can be made available to the end users who need them to perform useful work. The longer a company is without its IT infrastructure, the less likely a company is to recover from an interruption at all.

Heavy Investments in Backup

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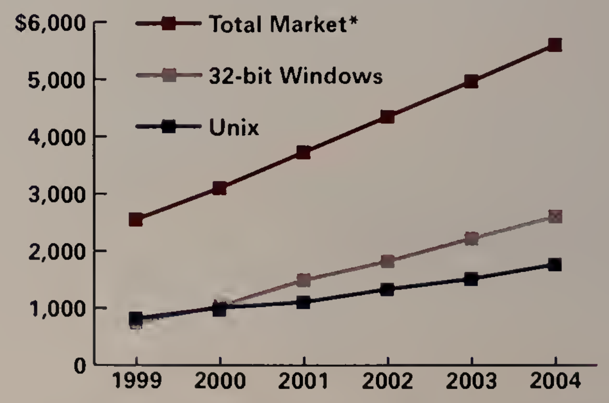
(in millions)



* *The total market figure includes revenues across all operating systems, including Unix and 32-bit Windows as well as mainframe and others.*

SOURCE: IDC

Downtime costs mount quickly, at an average rate of more than $1 million per hour across all industry segments, according to one study by Stamford, Conn.-based Meta Group, Inc. Recovering operations after one week of downtime becomes virtually impossible: the losses are too great for most businesses to survive.

Despite these realities, disaster recovery planning is often given short shrift within businesses. IT organizations are held responsible for developing disaster recovery capabilities, but often have limited budgets for doing so – a reflection of management's view that disaster recovery planning is an additional insurance expense that may be cut during budgetary belt-tightening. In fact, in many businesses, disaster recovery isn't a formal function at all, but is subsumed in the systems and network management budgets of the IT group. There, it rarely receives any special attention from management – until a disaster occurs.

IN THIS ARTICLE

Five guidelines for ensuring survivability of mission-critical systems

Whether disaster avoidance and recovery planning is given high visibility or not, IT and network professionals should keep the following five guidelines in mind to ensure the survivability of mission-critical systems and the business processes they support:

1. GET PROACTIVE. Every decision made about storage and server hardware acquisitions, network design and application architecture should consider the possibility of unplanned interruption. IT and network

> > > Continued on page 18

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Keeping the Bad Guys OUT

BY LAUREN GIBBONS PAUL

Intrusion detection becomes critical in an age of increased threats from outside – the question is how to pay for it.

Most companies hate to admit their networks have been compromised by outside intruders. But just because they don't like to talk about it doesn't mean it doesn't happen *(see By the Numbers).* And when breaches happen, they're expensive.

U.S. businesses that participated in the 2001 Computer Security Institute/Federal Bureau of Investigation Computer Crime and Security Survey reported financial losses of $377 million over a 60-month period due to breaches of information security. And that's only counting the losses companies could quantify. Nearly 80% of the 530 companies reported financial loss due to cyber-attacks but only 37% of respondents could put a price tag on their losses. Theft of proprietary information was the costliest category, with financial fraud a close second.

IN THIS ARTICLE

- **Security often underfunded**
- **Benefits of outsourcing**

Given the potential harm, you'd expect companies to devote significant resources to keeping intruders out of their corporate networks. But that's often not the case. In fact, until a company suffers a quantifiable loss, it is unlikely to dedicate much in the way of money or personnel to information security, says Frank Prince, senior analyst in corporate infrastructure for Forrester Research, Inc., in Cambridge, Mass. "The consistent message we get from people who run security is they don't have enough people, money or time," says Prince.

U.S. companies spent only $239 per $1 million of top-line revenue on security in 2000, according to Forrester's research. The security market is growing at a healthy compound annual growth rate of 36% through 2004, but the total amount of money spent on security still will not be great, says Prince.

Security hardware and software purchases may get a boost in the wake of the Sept. 11 attacks on New York and Washington, D.C., since executives are just as jittery as anyone else. But that increased attention on security is unlikely to be sustained, says Prince. One reason for this is the methods hackers use to break into networks are changing rapidly, making it hard to get a basic understanding of what is at stake and how to prevent intrusions. "It's difficult to take a rational approach to deciding how much money to spend on this," says Prince.

Another problem: The return on investment is necessarily always couched in the negative, as in, "I could save $x million if I had an event happen this year." In the aftermath of the Sept. 11 attacks, the cost-avoidance argument may be compelling enough, but over the long haul, it tends not to be, he says.

BENEFITS OF OUTSOURCING

Jeff Dow, vice president of information security for $14 billion media conglomerate News Corp., has faced this very problem. Responsible for security for such news companies as Fox Television and 20th Century Fox, Dow was understandably anxious to protect his data networks from outside

> "It's so hard to show **a return on investment** on intrusion detection [services]. I'm a big fan of outsourcing. We would have had to pay someone at least **$100,000 per year** for this function. And since we're so big, I would have had to hire a staff of 10 to 12 of these **highly paid professionals.**"
>
> *– Jeff Dow, VP of information security, News Corp.*

intrusion. But hiring a dedicated staff to pore over Web logs in real time 24x7 would be cost prohibitive. So Dow elected to outsource intrusion detection to a service provider. For one monthly fee, the provider handles intrusion detection at its location for all News Corp. companies. For Dow, the solution was an answer to his prayers.

"It's so hard to show a return on investment on intrusion detection [services]. I'm a big fan of outsourcing. We would have had to pay someone at least $100,000 per year for this function. And since we're so big, I would have had to hire a staff of 10 to 12 of these highly paid professionals," he says. Because News Corp. is such a large company, the service provider agreed to give it discounts on its service.

News Corp. isn't the only entertainment company to outsource intrusion detection. Sony Pictures Entertainment also decided to let a service provider handle this function. For Jeff Uslan, director of information protection and security for Sony Pictures, the decision came down to the same sort of economic analysis that Dow performed at News Corp.

Hiring a highly qualified network professional to watch over the network around the clock is a costly proposition, especially where the risk is not obvious. "It costs a lot to hire someone who will watch over the shop at 2 a.m.," he says.

Having a service provider handle intrusion detection is a good option for many, says Forrester's Prince. This can be very effective if the provider's service is well integrated with the company's operations. For example, there needs to be a comprehensive plan for what to do if the service provider identifies an intrusion. The company must get involved at that point to safeguard its own data and systems, he says. Information must flow quickly to all potentially affected, including human resources, legal, public relations and anyone else who needs to help repair the breach. Both customer and service provider must be clear where the service provider's responsibility ends and the customer's begins – something that's not always obvious, Prince says.

Whether handled by a service provider or in-house, the most important aspect of intrusion detection is that a company learns from the security incidents that happen and incorporates those lessons into the overall security plan. "You have to feed the lessons learned back into your ongoing operations," says Prince, so your intrusion detection system becomes more robust over time.

Paul is a Waban, Mass.-based freelance writer who writes frequently on security issues. She can be reached via e-mail at laurenpaul@mediaone.net.

BY THE NUMBERS

Percentage of companies using intrusion detection techniques: 61%

Percentage of companies reporting unauthorized use of computer systems within the last 12 months: 64%

Number of outside intrusions reported by companies in 2001:

1 to 5:	**41%**
6 to 10:	**14%**
11 to 30:	**3%**
31 to 60:	**1%**
Over 60:	**3%**
Don't know:	**38%**

The 2001 Computer Security Institute/Federal Bureau of Investigation Computer Crime and Security Survey examined 530 U.S. companies' security practices. Of those companies aware of intrusions, the greatest percentage reported between one and five incidents in 2001.

Source: CSI/FBI

Common Sense About Uncommon THREATS

Cisco's comprehensive approach to intrusion protection leads the way.

Network managers and enterprise executives share a common challenge today. Business requirements demand that the network be accessible to more and more users, including customers and suppliers as well as those users within the company. But opening the network to these users exposes the enterprise system to attack from an ever-widening array of sources, particularly unwanted intrusions and heightened insider threats. Additionally, attackers have sharpened their skills using new methods to penetrate or circumvent traditional perimeter network security technologies.

IT professionals have struggled to keep up with the competing demands of network openness and network security. Some have tried deploying a variety of best-of-breed point solutions. But what they quickly find is that there is no substitute for a comprehensive, pervasive network security solution where the different pieces complement one another, providing a layered solution.

Providing both threat identification and threat mitigation technology, the Cisco Intrusion Detection System (IDS) is just such a pervasive solution for combating unauthorized intrusions. Moreover, Cisco IDS is a dynamic security component of Cisco's end-to-end security product solution that has been engineered from the ground up to support the broadest range of network deployments, from small businesses to the largest enterprise environments.

Cisco IDS is a critical element of SAFE, the company's best practices security blueprint, designed to launch e-business into the future. In practice, SAFE determines which network security solutions you should deploy throughout your network via custom-designed modules that simplify network security design, rollout and subsequent management. The enterprise gets immediate and clear benefits from SAFE because the blueprint:

- Provides a solid foundation for migrating to secure and cost-effective converged networks
- Enables the cost-efficient deployment of a modular, scalable security framework
- Delivers truly integrated network protection with the highest level network security products and services.

The bottom line of this pervasive network security blueprint, in which the different components integrate with one another, is a quicker, less expensive deployment. This translates into faster time-to-market of your e-business applications and the optimal return on investment as revenues increase more rapidly from the applications.

It is within this dynamic SAFE blueprint that IDS provides pervasive intrusion protection. IDS takes a holistic approach to intrusion security, beginning with an understanding of the very broad nature of attack techniques.

Today's enterprise sites are a very complex mix of systems and platforms. This means the sites are vulnerable to the full range of attack techniques, which strongly suggests a comprehensive network security and intrusion protection solution, such as IDS.

The IDS solution includes both network and host intrusion detection components, with the host component protecting the servers against attacks on the applications

The Cisco Catalyst 6500 IDS Module is designed to integrate IDS functionality directly into the Cisco Catalyst 6500 Series Switches.

and operating system *(see Stopping Them at the Host)*. The Cisco IDS portfolio provides devices spanning the network, switch, host, router and firewall infrastructures. Offered as overlay technology, the network and host sensors secure networks in a variety of scenarios.

However, the Cisco IDS solution also incorporates network-integrated technology, such as the Cisco Catalyst 6500 IDS Module and software-based router and firewall images. With key features and characteristics including dynamic response capabilities, scalability and performance, and security visibility, the depth and breadth of Cisco's IDS make it the industry's first enterprise-scale intrusion detection system.

Specifically, the recently released Cisco IDS 3.0 software for Cisco 4200 Series appliances enables automatic distribution of signatures and rapid updates of attack signatures, as well as provides a highly robust signature language allowing customers to write their own complex signatures. IDS Network Sensor also features active response support for the Cisco PIX Firewall family and Cisco Catalyst 6500 Series Switches.

Cisco IDS 3.0 answers the key challenge of event monitoring – namely reducing the occurrence of false positives – allowing administrators to focus on real alarms. This effectively reduces network administration costs because staff can focus more on real problems instead of chasing down false alarms. Other key features of IDS Network Sensor include:

- **Active response,** allowing users to configure systems to automatically shun or eliminate specific connections by changing access control lists on Cisco routers, switches and firewalls
- **Sophisticated detection** of network attacks utilizing complex fragment reassembly algorithms, extensive web de-obfuscation analysis and robust protocol decodes developed by Cisco's renowned Countermeasures Research Team (C-CRT) to combat hacker and insider threats
- **Unique protection** against distributed denial of service (DDoS) attacks by detecting communications between DDoS agents and the hacker for known DDoS tools
- **Comprehensive detection** of application attacks covering multiple application protocols.

Another key element of IDS is the Cisco award-winning Catalyst 6500 IDS Module. This module reflects the ongoing effort at Cisco to migrate network security directly into the infrastructure as an intelligent service rather than as an add-on component.

The Catalyst 6500 IDS Module is designed to address switched environments by integrating the IDS functionality directly into the switch. This allows users to monitor traffic directly off the switch backplane rather than having to utilize external SPAN ports.

With other sensing platforms and network security appliances, and security management and monitoring options within IDS, Cisco offers the most comprehensive, integrated intrusion solution available. For more information on IDS and the complete Cisco network security solution set, click on www.cisco.com/go/idssolutionskit.

Stopping Them at the Host

The host provides application services, making it highly visible on the network and a common target of attack. The host also presents some of the most formidable security challenges, owing to the sheer number of different host platforms, operating systems and applications found in the enterprise today.

With this threat in mind, the Cisco IDS Host Sensor, powered by Entercept™, identifies and blocks attacks before any unauthorized transactions or intrusions can occur. Where other host defense systems merely detect a problem, Host Sensor mitigates potential damage because it is preventive in nature. This key preventive feature results in optimal system availability, which leads to optimal return on investment of the system itself.

"The Cisco IDS Host Sensor is an important extension of Cisco's security monitoring and management portfolio, giving customers comprehensive network and host-based intrusion detection capabilities," says Richard Palmer, vice president and general manager of the Cisco VPN and Security Services business unit. "It exemplifies Cisco's continued commitment to provide customers with practical security solutions for today's e-business demands."

Host Sensor is installed on each server, guarding both the operating system and the applications it supports, providing protection from threats like Code Red, Code Blue and Nimda. Employing unique interception techniques, Host Sensor's key features include:

- **On-the-spot attack prevention,** due to its ability to prevent attacks at the system call level before they execute
- **Prevention of buffer overflow attacks** by identifying the execution of the injected code and preventing the most commonly exploited vulnerability from compromising the system
- **Upgraded integrity** resulting from the sensor locking down the system by controlling access to the system binaries, configuration data and other system objects.

Host Sensor complements other elements of the Cisco IDS for the smoothest integration of security components offered by any single security provider. And as a key component of the Cisco SAFE security blueprint, IDS represents the most comprehensive and pervasive answers to the daunting threats to enterprise systems.

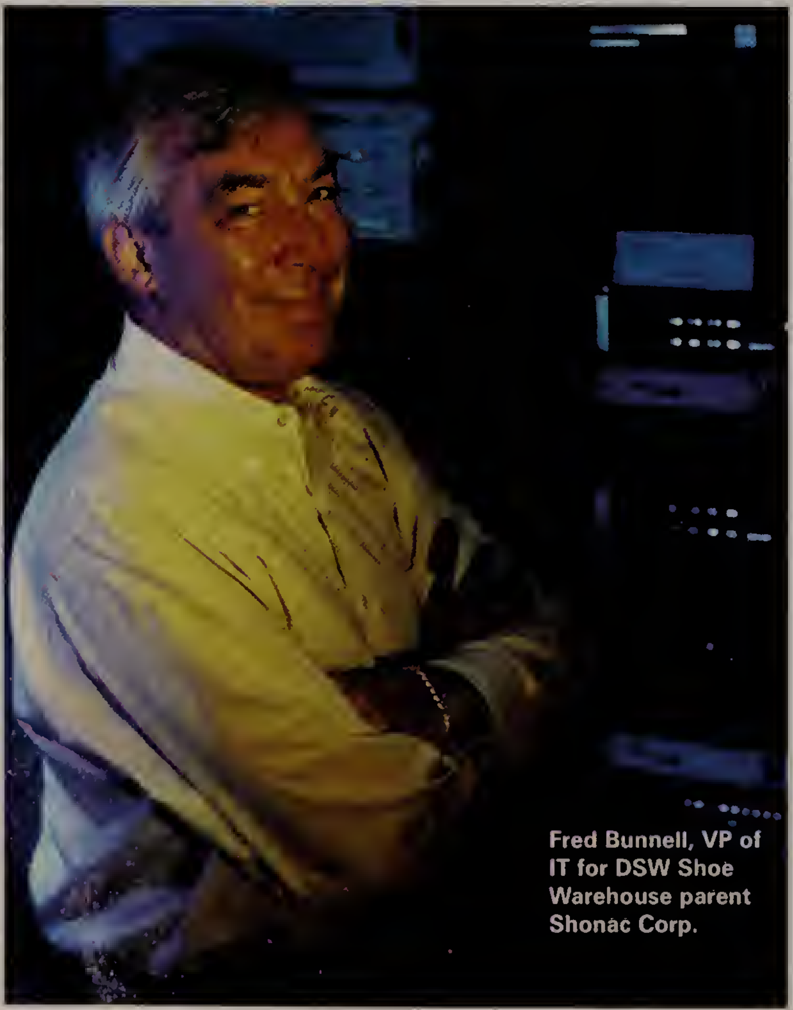
For more information on IDS Host Sensor, click on: www.cisco.com/go/idshost.

VPN's Value Proposition Greater Than Cost Savings

BY BOB WALLACE

CREDIT ITS LOW-COST VIRTUAL PRIVATE network (VPN) and its frugal business practices for selling discounted footwear in no-frills brick and sheet metal stores for keeping the DSW Shoe Warehouse chain on its feet. The company's Framingham, Mass., store is standing tall in a once dense shopping forest where high operating costs have felled four once-thriving major retail chains in the last two years.

For instance, the company cut communications costs by using the Internet to support a dial VPN that transports traffic between local DSW stores and parent Shonac Corp.'s Columbus, Ohio, headquarters. In addition, the work-in-progress access upgrade to DSL at most of its 92 stores promises to further streamline lifeblood business processes without additional spending.



Fred Bunnell, VP of IT for DSW Shoe Warehouse parent Shonac Corp.

MICHAEL WILLIAMS/MERCURY PICTURES

It's this combination of Fred Bunnell's bottom-line-oriented network decisions and efficient spending practices by the company that have kept the retail chain on track. For example, the interior of the vast DSW store in Framingham's Shoppers World mall features shoes displayed atop brown cardboard carton sleeves stacked waist high to form the store's 48 aisles in place of expensive metal shelves and fixtures. The result is a recipe for holding the line on costs and avoiding spending amidst a troubled economy.

IMPROVED PROCESSES

"Even though we sold our dial VPN to top management purely as a cheaper alternative to the [Public Switched Telephone Network] and frame relay, we've since found that the business value of VPNs goes beyond cutting communications costs to include improving current processes," says Bunnell, VP of IT for parent Shonac. For example, having its 92 stores dial out through the network hub in Columbus to one nearby VISA, MasterCard or American Express point-of-presence (POP), rather than each dialing out themselves to the POPs closest to their far-flung stores for credit card authorizations will save a pile of money – more than enough to bankroll the ongoing installation of higher speed, dedicated DSL access pipes at its stores, he says.

IN THIS ARTICLE

- Improved processes
- Easier file sharing
- International savings

DSW is paying $140 per store per month for 144Kbit/sec DSL links to the Internet instead of $420 a month per store for an end-to-end 56K frame-relay connection.

The fatter DSL pipes, in turn, will speed performance of current and planned applications and features. Store work-

"Companies [that try] to deploy their own VPNs will run into difficulties because of technical complexities and the lack of skilled staff." *– Jeff Wilson, executive director, Infonetics Research, Inc.*

ers will be able to use the enhanced VPN to access the company's intranet to review corporate policies and procedures archived in a Web server. Bunnell's post-upgrade "to-do" list also includes implementing an e-mail package, running intra-store phone calls over the network and eventually installing self-service kiosks that provide store employees access to data in the firm's human resources system.

DSW's homegrown VPN provides IP Security (IPSec) and Triple DES encryption for network traffic, even though Bunnell admits the data traveling over the network contains nothing extremely sensitive. What's sensitive, however, is discussing the pros and cons of DSL access to the Internet, weighing the risks against the cost and bandwidth benefits. Yet Bunnell remains committed to the arduous effort because the added capacity of DSL access will support the types of applications mentioned above.

"Companies are under quite a bit of pressure to cut communications costs, but IT managers must also view a VPN as a foundational network infrastructure that can let them support additional applications and capabilities that add big business value," says Bunnell.

IT managers are increasingly seeing the benefits of VPNs, with worldwide user spending on VPN products and services projected to soar from $12.8 billion by year-end to $48 billion in 2005, according to an Infonetics Research, Inc. report. "Strong growth in spending for VPN services started at the end of 2000, with much of the future growth coming from managed services," predicts Jeff Wilson, executive director for the San Jose, Calif., consulting and research firm.

Sales of dedicated VPN hardware and software in particular are also showing solid increases, climbing 19% from the first quarter of this year to $535 million in the second quarter, while 2Q sales of software and hardware firewalls, which are commonly used with VPNs, climbed 12% to $430 million, according to Infonetics.

One VPN adherent is Gelco, Inc., a Minneapolis-based firm that has already migrated from a private-line network to a pure IP backbone network by signing up for a fully managed IP VPN service from a major ISP. The virtual network connects the firm's four sites as well as two of its government customers.

The network goal was twofold: to avoid having its 33-person IT staff manage multiple network protocols, and to increase security by using IPSec, Triple DES and certificate authority features from the ISP. Security was a top issue as Gelco manages expenses and other finances for its customers, which include government clients. And like most users, the firm also sought to cut communications costs.

The outsourced VPN service has enabled Gelco to achieve all three goals, reducing its monthly line and administration charges by approximately 35% to 40%. The firm pays a monthly lease for the VPN routers it uses and a monthly fee for the rest of the VPN service. "Our two biggest priorities are reducing costs and increasing network security," says Larry Peterson, Gelco's VP of corporate technical services. He sold the company's CEO, CFO and senior operations vice-president on the project.

Gelco's choice of a VPN service fully managed by an ISP provides better performance for file transfers run over the provider's IP backbone than was available by the "best effort" public Internet used by DSW and other early VPN implementers.

EASIER FILE SHARING

But beyond the savings and added features lies the core business value behind the decision. In Gelco's case, that value was to facilitate file sharing, having found that e-mailing design documents and development specifications from store to store did not support its goal of collaboration and also wasted network capacity and disk space on employees' PCs.

"In lieu of buying a full-blown document management system, we created a central repository of files on the VPN that are located at headquarters and remain at headquarters," explains Peterson. "Workers at sites can access the files using the VPN, modify them and have everyone's changes made to the central set of files rather than having multiple copies with differing changes being sent all over the place. We needed stringent version control of the files."

The ability to add sites to the VPN quickly and simply was another key business benefit. "We sold the VPN service as being more flexible and easier to [connect] customers than [with] our past private line network," says Peterson. "Connectivity to a legacy network would not cut it for us or them."

Beyond the initial decision to use a VPN is how best to implement one: Do it yourself like DSW or outsource like

MICHAEL WILLIAMS/MERCURY PICTURES

"Even though we sold our dial VPN to top management purely as a cheaper alternative to the PSTN and frame relay, we've since found that the business value of VPNs goes beyond cutting communications costs to include improving current processes." —*Fred Bunnell*

Gelco? An Infonetics survey of IT managers at 240 small, medium and large U.S. and Canadian firms planning to implement a VPN by 2003 shows that most envision enlisting some outside help in deploying and managing their VPNs. Forty-four percent of respondents plan to install VPN equipment themselves and handle all aspects of managing the network internally. Another 36% plan to deploy VPN equipment themselves, but outsource some aspects of design, installation and management to a third-party such as a service provider. The remaining 20% split evenly between those opting for managed equipment service and those opting for managed network service.

Wilson predicts the "do it yourself" options will become less popular, while the number of users choosing managed services will increase. "Companies [that try] to deploy their own VPNs will run into difficulties because of technical complexities and the lack of skilled staff. [Then they'll] stop and look for help."

Anchor Pharmacies, Inc. decided from the get-go not to build its VPN from scratch. Instead, the $38 million Hampstead, Md.-based chain signed up for a dial VPN from a top IP backbone provider. This service replaced its one-way, online communications process, whereby headquarters polled stores weekly using a remote-control package over the PSTN. This practice quickly ran up communications costs as many stores are located outside the firm's local calling area.

Now, the virtual net supports two-way communications, and store computers equipped with VPN client software dial into the service provider's network to reach applications resident on a Web server behind the firewall at corporate headquarters. The core business value is that the VPN makes it easier, cheaper and more secure to collect store data on a daily rather than a weekly basis.

Getting stores' sales data faster helps Anchor streamline the process of feeding information into the company's accounting, operations and executive management systems. As such, the company can make quicker sales decisions and better control store inventory, says Anchor IT director Allen Armentrout. "Had we stuck with the original process, we would have needed to add phones, modems and staff," he says.

The goal of secure data, of course, pertains to *all* of an enterprise's users: remote users want the same computing experience that their co-workers in the central office enjoy; and network administrators want that experience to mirror the level of security enjoyed behind the corporate firewall.

"Even when there is protection and security at remote sites for remote users, often there is no way of enforcing it," says Stacy Lum, chief technology officer of InfoExpress.

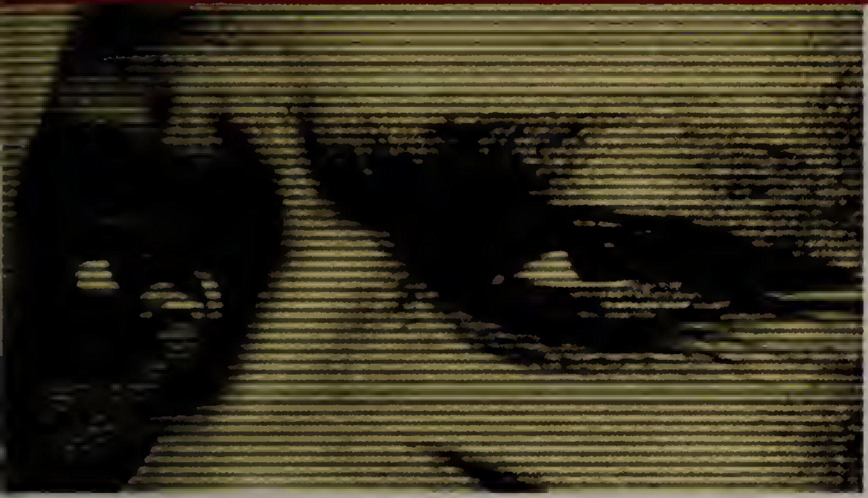
To address this need for security enforcement at remote sites, InfoExpress offers several solutions, including its CyberArmor personal firewall, installed on individual PCs. CyberArmor protects users from attacks on the Internet by keeping intruders from using the remote PC as a gateway into the corporate network.

INTERNATIONAL SAVINGS

Those companies with international sites stand to save even more with VPNs, over international frame relay connections, which are typically priced much higher than in the United States. "Using VPNs to connect sites abroad is 30% to 90% cheaper than using frame relay," claims Jim Slaby, a senior analyst with Giga Information Group, Inc., a Cambridge, Mass., consultancy. "It's really a slam-dunk for frame and more so for private lines."

Laird Technologies, Inc., for example, found that it would cost $6,000 to $10,000 a month for a frame relay connection to tie a site in France to its headquarters in Delaware Water Gap, Pa. Jim Slick, network manager for the $210 million interference shielding products maker, explored dedicated Internet connections and learned that for only $2,000 a month, he could get a 768Kbit/sec access pipe. The savings made the decision easy. "You've got to love the VPN option," he says. "The performance has been stellar."

Wallace is a freelance technology writer based in Ashland, Mass. He can be reached via email at bwallace_write@msn.com.



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<<< Continued from page 8

> **"We** got all of the business unit heads and IT managers together and **compared notes.** We **determined** that buying platforms without considering their recoverability was **creating exposures** for the company **that we didn't want."**
>
> *—Steve Beatty, staff systems programming analyst at a Fortune 500 company*

professionals should think about how the hardware would be replaced if a disaster occurred and whether another platform could be substituted in a pinch to carry the load until a replacement was obtained and deployed. With networks, redundant carriers and redundant paths to data should be provisioned for all critical data paths. With applications, designs should be simple and portable so that recovering a client/server application doesn't require a one-for-one replacement of the existing application hosting environment.

Says Steve Beatty, a staff systems programming analyst with a Fortune 500 company, "We have only within the last year or so been thinking about equipment acquisitions in terms of their recoverability [as a result of a corporate-wide reorganization]. We got all of the business unit heads and IT managers together and compared notes. We determined that buying platforms without considering their recoverability was creating exposures for the company that we didn't want."

2. GET REAL. Disaster recovery provisioning costs money and budgetary allocations may be in short supply. It is critical, therefore, to allocate limited funds smartly. Focus first on disaster avoidance. Alarms, suppression systems, power protection, security provisions and awareness programs are all key components of a disaster avoidance strategy. Next focus on the least sexy but most economical disaster recovery technologies, such as smoke alarms, a sprinkler system, uninterruptible power supply, door locks, an anti-virus program and other components of disaster avoidance that will be effective in preventing the lion's share of losses.

3. PROTECT THE DATA. After personnel, data is a company's most nonreplaceable asset. While a choice can be made between redundancy and replacement strategies when it comes to other aspects of IT infrastructure, there is no such thing as data replacement. Redundancy requires, at a minimum, a program of tested tape backups and secure off-site storage. Be aware, however, that tape and disk capacities are growing "out of sync" with each other. At a recent storage conference in Chicago, Nick Janakas, an IT project manager with Motorola Corp. in Arlington Heights, Ill., complained, "The tape manufacturers and the disk manufacturers no longer seem to check with each other to ensure that tape can effectively back up disk storage platforms, which are growing into the multiple terabyte range."

The length of time and network bandwidth required to backup to tape is often a focus of IT and network managers, but data restoral is an even bigger issue. In heavily virtualized storage environments, file system restoral can require identical storage platforms and hundreds of hours. Planners need to understand their data storage infrastructure and time-to-data needs to determine whether they can optimize tape backup strategies or must abandon them in favor of disk-to-disk copying or mirroring.

4. LOOK FOR DUAL VALUE. Making a network, system or storage platform highly available costs money. These expenses may be more palatable to management, however, if they provide additional value to the company beyond risk reduction. For example, a mirroring strategy may be leveraged to make data more readily available to users at a remote location. And redundant networks employed for recovery purposes could be pressed into service at peak times of normal network use to reduce congestion and improve throughput. Whenever a disaster recovery provision can be shown to have operational value to a company, it is more apt to be funded.

5. TEST, TEST, TEST. Disaster recovery planning is not a project that can be forgotten once completed, but a process of iterative testing and improvement. Once a strategy is defined, it must be tested. Gaps that are uncovered need to be addressed, then the strategy needs to be retested. Testing is ongoing to ensure that the plan addresses ongoing changes in technology and in the business processes being supported. Testing has the additional value of acclimatizing personnel to the task of behaving rationally in the face of an irrational event. As Shakespeare said, "All things are ready if our minds be so."

Toigo is an independent consultant, veteran contingency planner and author of Disaster Recovery Planning, 2nd Edition *(Prentice Hall PTR: 2000).*

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VPNs: How Secure ARE They?

BY STEVE ULFELDER

Mack Technologies is in the early stages of a VPN rollout. "There are plenty of challenges, and security is at the top of the list," says Rick Anselmo, manager of IS at the Westford, Mass.-based contract manufacturer. Because Mack Technologies builds and tests hardware devices such as servers created by other companies – including Hewlett-Packard and Sun Microsystems – "Our security issues are complicated," Anselmo says. "We're dealing with a lot of [other companies'] proprietary information."

Virtual private networks are quickly taking hold as a relatively inexpensive way for enterprises to connect remote offices and workers. According to a recent report from Framingham, Mass.-based International Data Corp. (IDC), "Enterprises saddled with increasing network costs due to a jump in mobile usage are looking past expensive private-line services. IP-VPNs used for LAN-to-LAN connections are less expensive than private-line alternatives."

Network managers understand the cost benefits of VPNs, but many agree with Anselmo that security is a key concern. Just how secure are VPNs, and how can they be made more secure? Can IT managers rest assured that VPNs meet enterprise security demands?

In an illustration of the turbulence surrounding VPN security, ANX [previously the Automotive Network Exchange] – a pioneering VPN joint effort launched in 1995 by U.S. automakers – recently abandoned its multivendor IP Security (IPSec) strategy; despite demanding that its vendors test their equipment with the Internet Engineering Task Force (IETF), ANX was unable to overcome interoperability problems and now plans to switch to a single-vendor approach.

But analysts and IT managers view this as a typical bump in the road for unproven technology, pointing out that advances on several fronts – authentication, encryption, personal firewalls and security appliances – have the potential to make secure VPNs a corporate reality, rather than a contradiction in terms. "The technology's been exposed to a lot of threats recently, so weaknesses have shown up," says independent technology consultant and author Jon William Toigo. "But the security of a VPN really depends on how it's implemented."

AUTHENTICATION OPTIONS

For VPNs to take their place in the enterprise, better and more scalable methods of identifying users and applications must emerge. Sure, IPSec protects tunneled packets against such attacks as spoofing, modification, and eavesdropping – but that's no help if the sender at the other end of the IPSec tunnel is an attacker. Fred Avolio, security expert and principal of Avolio Consulting in Lisbon, Md., says, "If even one [remote] office is insecure, all a VPN gives you is a secure office for someone to attack you from."

IN THIS ARTICLE

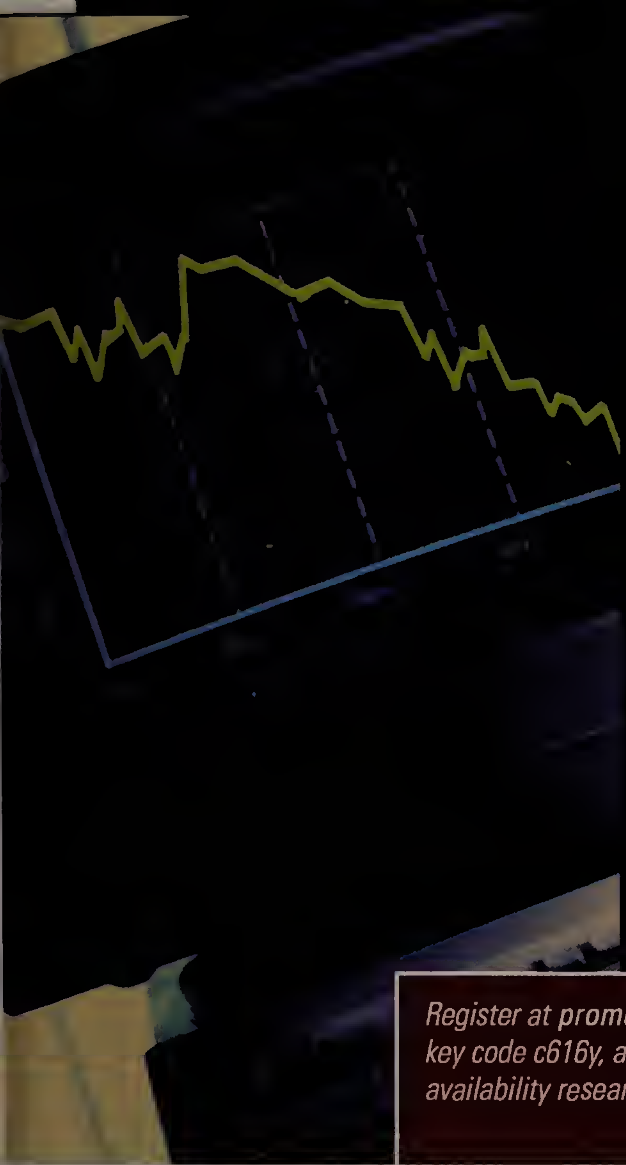
Authentication options

Stronger encryption coming

DSL weakness

Security appliances

To improve VPN authentication, the IETF's Public Key Infrastructure (PKI) task force and many vendors are working on such technologies as digital certificates and directory services. Digital certificates are already used to authenticate the encryption keys of the endpoints of IPSec networks; in the future, though, the certificates will carry much more information about users. This, in turn, will allow for more detailed, precise user profiles.



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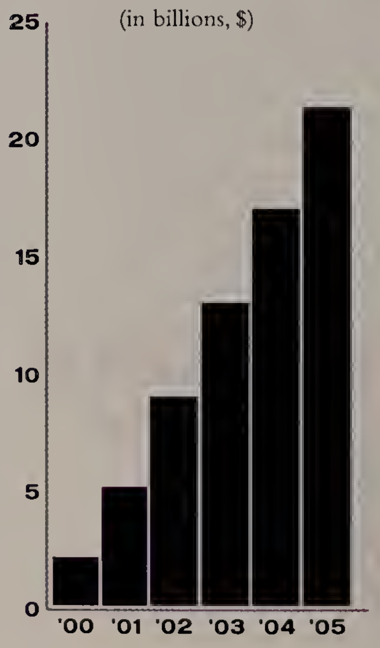
> **"If even one [remote] office is insecure, all a VPN gives you is a secure office for someone to attack you from."** – *Fred Avolio, principal, Avolio Consulting*

Internet key exchange (IKE) using pre-shared keys, the most frequently used verification method on IPSec VPNs, works well on smaller networks but doesn't scale well. Experts say enterprise-grade networks demand the more scalable public key cryptography – which, when used on a large scale, in turn necessitates PKI to issue and manage X.509 digital certificates.

Most IT organizations would understandably prefer to use existing authentication technologies, such as RADIUS, TACACS+ and SecurID, with their remote-access VPNs. Unfortunately these legacy methods don't work well with IKE. The good news is that the IETF is addressing compatibility issues through XAUTH, an IKE extension intended to make room for legacy authentication. The bad news: some have complained that XAUTH itself is vulnerable to man-in-the-middle attacks. Jason Smolek, an analyst at IDC, admits legacy integration "is a tricky problem, and it's likely to stay that way for awhile."

Growth Booms as VPN Security Concerns Dissipate

Worldwide IP VPN Services Revenue



IDC says that security as a barrier to VPN adopion is "eroding as IPSec has become standardized," resulting in dramatic growth for VPNs.

Source: IDC

STRONGER ENCRYPTION COMING

Vendors and some analysts agree that enterprises will continue to demand better encryption technology in VPNs. Today, that encryption is usually based on 40- or 56-bit key lengths. Both longer keys and stronger encryption algorithms are in the pipeline.

But John Girard, a vice-president and research director at Stamford, Conn.-based Gartner, Inc., believes that as long as network endpoints are wide-area networks' weak points, encryption is the least of network managers' worries. "Sure, a VPN will encrypt traffic," Girard says. "The problem is, all an intruder has to do is hack a user's desktop. So why bother [to attack] all that strong encryption?" He says businesses need to focus on such advanced authentication techniques as smart cards and biometrics – as well as on educating users about security risks.

DSL WEAKNESS

It's ironic that broadband Internet access, which helped fuel the explosion of remote networks, is also a crucial VPN security weakness. The always-on nature of Digital Subscriber Line (DSL) technology, used in many small and home offices, often frustrates network managers. "You can build a tunnel between [a remote user and headquarters] and be safe at the corporate site," IDC's Smolek says. "But within the user's personal area, you've got an issue."

VPN vendors have attacked the problem several ways. One approach gaining popularity is the "personal firewall" – client-level software that blocks Internet ports and detects intrusion attempts. In addition, several vendors now offer DSL routers with integrated firewalls.

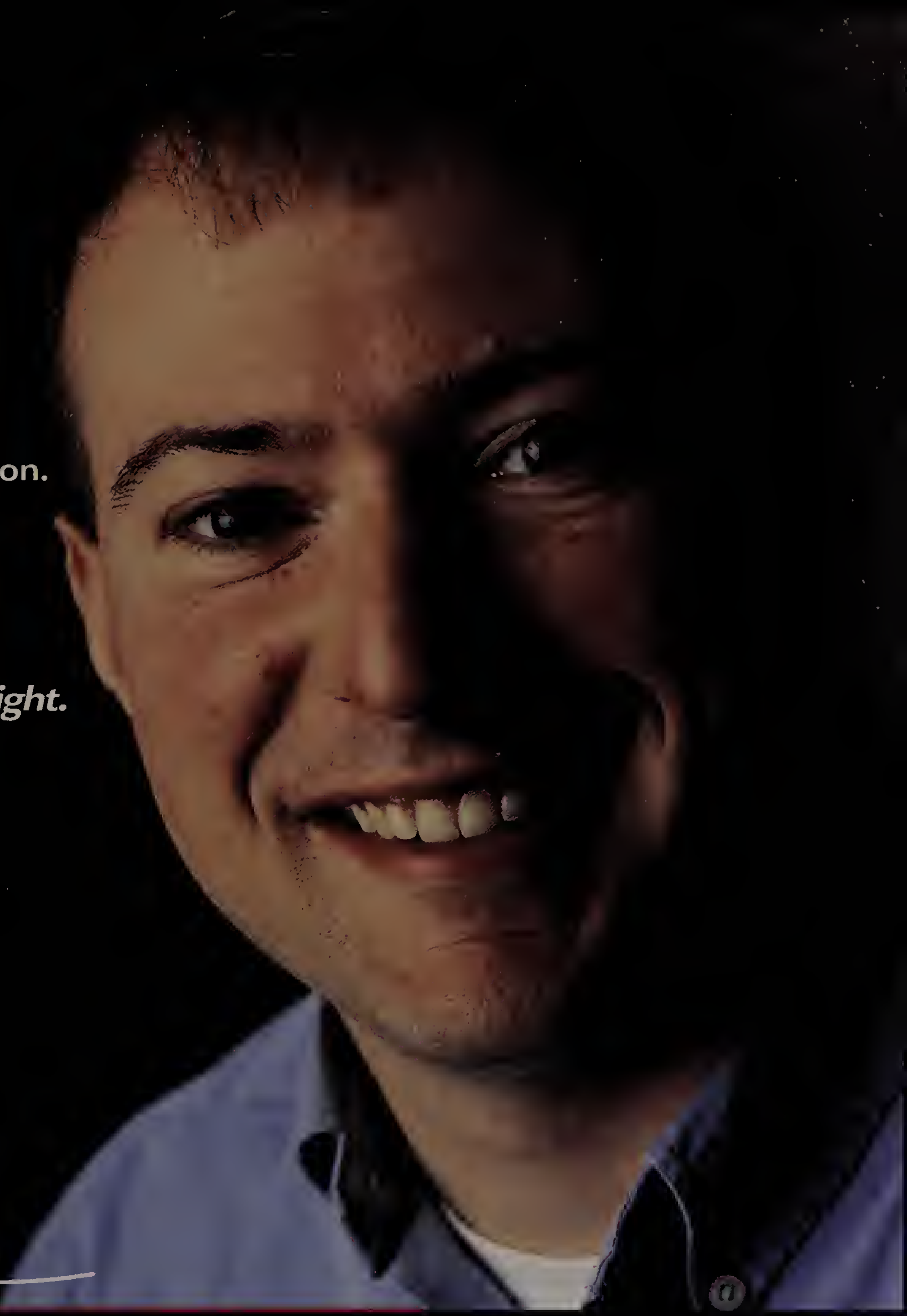
SECURITY APPLIANCES

To reassure network managers that they can implement secure VPNs, many vendors have begun offering devices generically called security appliances – devices that bundle VPN capabilities, a firewall, intrusion detection, packet sniffing and more. IDC's Smolek says the appliances are easy to install, and that "vendors also want to reassure customers that they can get security-in-a-box." This approach appears to be catching on in corporate America; IDC expects sales of IP-VPN firewall appliances to grow from a $304.7 million market this year to $791.2 million in 2005.

When all is said and done, analysts and users have little doubt that VPN security technology, while not without hiccups, is ready for prime time. Gartner's Girard says that building an enterprise-quality VPN "is possible, but it requires work and planning. A lot of enterprises aren't doing what it takes. When they look at the scale and complexity of doing a VPN the right way, they let things go."

"I'm optimistic," says Mack Technologies' Anselmo. "As we continue to understand how to make this thing scalable and secure, we'll add more and more users. There are just so many good reasons to do a VPN." ■

Ulfelder is a freelance writer based in Southborough, Mass. He can be reached at sulfelder@charter.net.



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Exploring 10G Ethernet and beyond

Experts say security, traffic-shaping technologies needed to make 10G practical.

■ **BY PHIL HOCHMUTH**

SAN DIEGO — While 10G Ethernet deployments are expected to start more widely once the standard is ratified next June, this higher-speed Ethernet may not be practical in some enterprise and carrier networks until supplementary technologies — such as TCP/IP off-load and higher-speed firewalls — are ready.

Those were sentiments expressed by experts at a 10G Ethernet workshop held recently at the San Diego Supercomputer Center, part of the University of California San Diego, for engineers from the vendor and standards communities. Issues on the table included what technologies are needed to support security and traffic shaping on 10G bit/sec networks, as well as what comes after 10G Ethernet — 40G, 100G or 160G bit/sec?

With the worldwide installed base of Gigabit Ethernet ports expected to increase more than fivefold by 2004 according to market researcher IDC, experts say demand for even higher-speed aggregation technologies like 10G Ethernet will become inevitable. 10G Ethernet is projected to be mainly a carrier technology for metropolitan-area service providers, but enterprise network applications could include backbone aggregation of Gigabit links in a data center or switch-to-switch connectivity across a large campus.

When these applications start rolling out next year, says Fred Worley, a Hewlett-Packard engineer, initial deployments will not have everything necessary to make a 10G network run as efficiently as a 1G bit/sec network.

"It's not that [10G Ethernet] is too fast," Worley says. "It's just that new technologies will need to evolve."

Early 10G entrants

These switch vendors have already announced 10G Ethernet products, even though the standard won't be ratified until next June.

Vendors	Products
Avaya	Module for the Cajun P550/P880 switches
Cisco	Modules for the Cisco 7600 router and Catalyst 6500 switch
Enterasys	Matrix E-1 switch
Foundry	Modules for the BigIron switch
Riverstone	The RS 16000 switch

TCP/IP off-load — implementing part of an IP stack as hardware instead of software in a device for faster performance — and new algorithms for 10G bit/sec packet inspection are in development. But these technologies won't be far along enough when 10G products start shipping en masse next year, Worley says. These kinds of technologies will be important for ensuring that high-speed links are secure and that devices attached to these networks can keep up with such a high packet-forwarding rate.

An example Worley gave of how 10G Ethernet is challenging network hardware design was a 10G Ethernet network interface card (NIC) that HP is co-developing with Nortel. (A prototype of the product was demonstrated last month at NetWorld +Interop 2001 in Atlanta.) While the switch vendors may have figured out how to shunt packets along at 10G bit/sec, Worley says, his research is dealing with such challenges as how NICs on servers with next-generation, high-bandwidth bus technologies (such as Non-Uniform Memory Access and InfiniBand) can take in and process that much data from such a big pipe.

"With the speeds we're talking about," he says, "one second of buffering [on an NIC] requires 1.2G bytes of RAM. How many people want to have a full server's worth of memory on their NICs?"

What's after 10G?

Even with the 10G Ethernet standard still not put to bed completely, engineers at the workshop discussed what could be next. While speeds beyond 10G bit/sec probably won't find their way into enterprise net-

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Short Takes

■ **IBM** last week launched a low-end server, dubbed the **p610**, designed to handle general-purpose tasks as an application server or small database server. The Unix machine comes with one or two Power3-II copper-based processors from IBM running at either 375 MHz or 450 MHz. Users can expand memory in the server from 512M bytes to 8G bytes. The Model 6E1 was built to take up relatively little space and is less than 24 inches deep and 8.5 inches wide. The 6C1 is designed to fit in a rack. The base server starts at $7,500.
www.ibm.com

■ **Rambus** last week said it has developed a signaling technology that could boost the speed at which data can travel between chips inside a PC. Codenamed **Yellowstone**, the technology has been under development at Rambus for two years, company President Dave Mooring says. Rambus wouldn't say when it expected the technology to find its way to market, but said it could be used to boost performance in desktop PCs, notebooks, servers and mobile gadgets. When it does appear, Yellowstone initially will support data transfer rates of 3.2 GHz, although Rambus hopes eventually to push the technology to 6.4 GHz, Mooring says.

InfoLibria touts do-it-yourself CDNs

New appliances offer alternative to outsourcing CDN needs.

■ **BY APRIL JACOBS**

WALTHAM, MASS. — New hardware and upgraded software from InfoLibria is designed to let companies set up their own content-delivery networks rather than outsource the duties to a service provider.

InfoLibria, which up until now has sold CDN products almost exclusively to service providers, says companies willing to build and manage their own CDNs will gain more control over the content they distribute and should be able to save money vs. going with a service provider.

CDNs are aimed at making network content, from text files to streaming video, more readily accessible to end users while saving bandwidth costs for the content generator. In general, the idea is to put more of the content closer to the end users, especially when it comes to bandwidth-intensive content such as video.

InfoLibria's new offerings include its MediaMall E-Class appliances, which typically sit behind firewalls and in front of Web servers. Upgraded versions of software for the appliances gives companies a Web-based view of all devices on a CDN and provides for remote setup and management. The software can be used to track network usage and bill for it within a company, and to set end-user access policies.

The offerings compete with products from companies such as CacheFlow, Cisco, Network Appliance and Volera, and setting up corporate CDNs provides an alternative to services from companies such as Akamai Technologies, Digital Island and Speedera Networks, observers say.

Building a CDN can be a better fit than using a CDN service for companies that don't need to constantly have their content distributed, says Greg Howard, an analyst with HTRC Group. A homegrown CDN can make it easier to control how certain content is pushed out to end users. "Transferring one copy of a file vs. 150 copies or

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TOLLY ON TECHNOLOGY

Kevin Tolly

Ease of use: No small part of TCO

With many network products — from network interface cards to switches and beyond — becoming commodities, the ease with which they can be set up and maintained looms ever larger as an important factor in the "total cost-of-ownership" equation.

Manufacturers know this and many address the issue — or think they do. Each year, hundreds of products roll through the labs at The Tolly Group — and far too many are just plain hard to use.

"Ease of use" cannot be evaluated in as easy and straightforward a manner as, say, packet forwarding. Many vendors apparently take the quasi-subjective nature of the issue to mean they simply can put forth unsubstantiated claims about the ease with which their products can be used.

A few years back, when graphical user interfaces began to supplant MS-DOS/Telnet command-line interfaces, the vendor community convinced customers that by definition GUIs made their products easy to use. It wasn't the case then, and it isn't the case now.

More than once, our engineers have retreated to using Telnet to configure a device because the browser interface made no sense at all.

More commonly, we've needed to abandon the browser because, via that interface, one cannot configure functions like switch quality of service. (Ask your vendor: "Can I configure 100% of your product's function via the browser interface?")

So, what are the causes of this "dis-ease-of-use"?

Simple: Vendors don't concentrate on improving ease of use because they have convinced themselves that their products are already really easy to use.

I know this because, as part of testing projects, vendors proud of their product's "ease" often ask us to include an informal evaluation so that we can sing the praises of the product in our report. Our honest feedback takes them by surprise.

All too often, vendors are simply in a hurry to get their products out the door. Some apparently don't even spend five minutes making sure that the documentation and the installation CD are in sync.

In one recent evaluation, the installation hit a dead-end on the first page when the vendor instructed the user to click on a menu option that simply did not exist. Trying all of the options on the menu eventually allowed us to "reconnect" with the documentation but this kind of glaring error, easily fixed, simply should not happen. Where was the quality assurance on this?

More often, though, we have the technological equivalent of the old adage "beauty is in the eye of the beholder." The developers of these products truly *believe* that these products are easy to use because for them they *are* easy to use. A product's developers — and their frequent-user colleagues — are the worst people to evaluate ease-of-use objectively.

Staffing pressures will not go away. Ease-of-use will continue to be a significant total cost-of-ownership factor. It is time that vendors realistically assess their approach to human factors issues.

Tolly is chairman and CEO of The Tolly Group. He may be reached at ktolly @tolly.com.

LindowsOS: A little bit Linux, a little bit Windows

■ **BY SAM COSTELLO**

A new company founded by MP3.com founder and former CEO Michael Robertson is looking to bridge the gap between applications available for Linux and Windows — a gap many open source software advocates blame for slow uptake of Linux on desktop computers.

The company, called Lindows.com, plans to release by year-end a preview release of a Linux-based operating system, dubbed LindowsOS, that can run both Linux and Windows applications.

Linux users have had to rely on WINE, a program that lets Windows applications run, although not efficiently, on Linux systems.

Skeptical feedback on Lindows.com's announcement came from Dan Kusnetzky, an analyst at market research firm IDC. "I believe that technically it can be made to work. I also believe that it will be difficult to convince people [to use it]," he says.

There are several companies — such as Citrix Systems — that offer Linux users the ability to employ Windows applications, but such vendors let customers run those programs on Windows computers and provide a way for Linux users to open them in a separate space on the desktop, simplifying the whole process, Kusnetzky says.

Lindows.com will also have to figure out a way to document all the Windows interfaces, information that Microsoft has not completely released. Without these interfaces, software cannot be guaranteed to function properly, Kusnetzky says. Though work in this area is being done with WINE, it is far from complete, he adds.

The final version of the LindowsOS will cost about $100 and, as with all Linux operating systems, a single copy can be installed legally on multiple computers.

Costello is a correspondent with the IDG News Services' Boston bureau.

10G

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works anytime soon, they are headed for carrier networks and could have a big impact on the kinds of services delivered.

"Fifty percent of the 802.3ae [10G Ethernet] task force thinks the speed should be 40 Gigabit," says Johnathan Thatcher, chair of the IEEE 802.3ae (10G Ethernet) Working Group and CTO of Worldwide Packets. "But we've always gone up by factors of 10."

IEEE engineers don't like to reinvent the wheel, Thatcher says. Just as the physical layer (PHY) design of Gigabit Ethernet was based largely on Fibre Channel, and some 10G PHYs were tied to OC-192, 40G Ethernet could be a likely next step, as 40G bit/sec is close to the OC-768 SONET technology that already exists.

Others think differently.

"A while back, some people [in the IEEE] wanted to do a 400M bit/sec standard," says Bob Grow, president of the 10 Gigabit Ethernet Alliance and an Intel engineer. "Look what happened to that effort."

While many IEEE members would like to see 40G, Grow is more inclined to either 100G bit/sec or 160G bit/sec Ethernet.

"Forty Gigabits per second does not have the bandwidth increase that holds interest for me," Grow says.

But for the sake of staying close to SONET technology, Grow says he could live with 160G bit/sec Ethernet, which would adhere to OC-3072 — neither of which will probably exist for several years. ■

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Get links to Web sites and articles on the 10G Ethernet Workshop page.

DocFinder: 6663

InfoLibria

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more is dramatically less expensive," he says.

One reason homegrown CDNs could catch on is that streaming is gaining momentum for use in online training and other applications. HTRC research indicates that the 35% of companies do streaming and that 42% of them will in 2002. Of those companies doing streaming, more than half will choose to build their own CDNs rather than outsource, according to HTRC. And that streaming will take up more network bandwidth: Companies expect that 12% of their network capacity will be taken up by streaming applications this year and increase to 19% in 2002.

InfoLibria's new appliances include the E100, which features 36G bytes of disk storage, 512M bytes of RAM, dual 10/100M-bit/sec Ethernet ports and a 1,000-MHz Pentium III processor.

InfoLibria's MediaMall E100 content-delivery network appliances include a slew of management capabilities, including remote setup.

> **Of those companies doing streaming, more than half will choose to build their own CDNs rather than outsource.**

The E100 can accommodate 90M bit/sec on-demand streaming or 170M bit/sec live streaming. The box costs $11,000.

The more powerful E200 comes with a 54G- or 108G-byte disk-storage capacity, 1G byte of RAM, dual 10/100M-bit/sec Ethernet ports and a Gigabit Ethernet uplink.

This device, which sports two 1,000MHz Pentium II processors, features 160M- to 200M-bit/sec on-demand streaming or 250M- to 300M-bit/sec live streaming. It costs $17,000.

Appliances packaged with Content Commander 5.0, the upgraded management software, start at $25,000.

The E-Class appliances are not InfoLibria's first enterprise network offerings. The company already offers caching appliances for enterprises and service providers under the DynaCache brand.

InfoLibria: www.infolibria.com

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Probe gives user better handle on WAN

Monitoring WAN bandwidth usage saves stock trading firm a bundle.

■ **BY DENISE DUBIE**

MORE WITH LESS
Budget stretching strategies
Online: www.nwfusion.com
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When Chris Lukas agreed to view a demonstration of NetScout's nGenius Real-Time Monitor, he didn't intend to spend money on new products. After all, his job is to keep IT costs down while giving 500 or so users the most bandwidth and uptime possible. But he took a chance — and to his delight, the tool now saves his company more than $1 million per year.

Stock trading firm Hold Brothers pays more than $80,000 per month to maintain an average of four T-1 lines to each of its 15 remote offices. Initially, it seemed the company would have to add more T-1 lines to help employees sustain their rate of about 1,000 trades per day. According to his calculations, Lukas would have had to pay another $6,000 per month, per T-1 line.

"We had not even considered buying software to monitor WAN usage, but NetScout's demo showed us instantly how our internally written software that worked well on the LAN was using too much bandwidth over the WAN," says Lukas, Hold Brothers' CTO. "We were able to rewrite the application to minimize WAN utilization."

He says the application all the traders use just didn't translate well in the wide-area environment. Using the data NetScout collected, Lukas' staff reconfigured the WAN connections and rerouted traffic to optimize WAN bandwidth for each user. *Network World* reviewers also recently looked at what NetScout's nGenius product suite had to offer users (see www.nwfusion.com, DocFinder: 6624).

During the demo, Lukas found one user tying up lots of WAN bandwidth during trading hours because he had chosen an "upgrade Windows" option. Lukas says he was able to track down the user and the site to which he was connecting, and postpone the bandwidth-hogging activity until after hours.

"The demo showed us the user and what he was doing, and we were able to tell him instantly to stop," Lukas says.

Last December, Hold Brothers installed NetScout's WAN RTM multiport probes at five remote offices, and the LAN RTM at its headquarters in Jersey City, N.J. Each probe can monitor four T-1 lines and send data back to a management console at headquarters. The data collected by all the remote office probes is stored in a Sybase database, which delivers WAN usage information to authorized users via a standard Web browser.

In the past, Lukas' staff of seven IT workers monitored WAN traffic by checking Cisco router ports, but he says that

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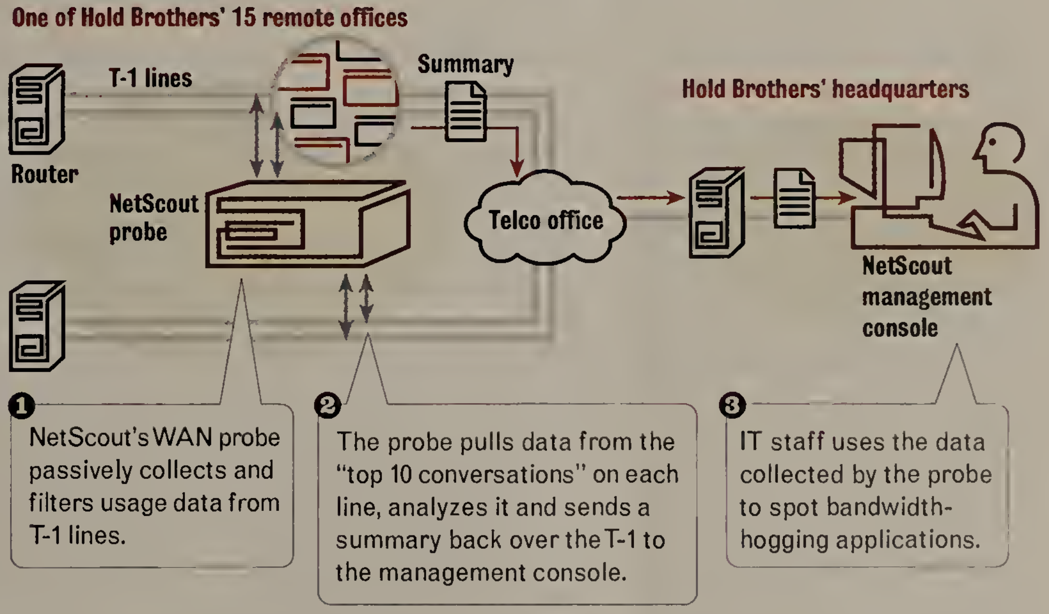
WAN-tastic savings

Stock trading firm Hold Brothers saved more than $1 million on WAN costs in one year after reworking bandwidth-hogging applications that were flagged using NetScout's probes and management console software.


One of Hold Brothers' 15 remote offices
T-1 lines
Summary
Router
NetScout probe
Telco office
Hold Brothers' headquarters
NetScout management console

❶ NetScout's WAN probe passively collects and filters usage data from T-1 lines.

❷ The probe pulls data from the "top 10 conversations" on each line, analyzes it and sends a summary back over the T-1 to the management console.

❸ IT staff uses the data collected by the probe to spot bandwidth-hogging applications.

Short Takes

■ **Courion** next month plans to unveil two server-based authentication-management products, **AccountCourier,** for self-service account provisioning, and **CertificateCourier,** for self-service issuance of digital certificates. AccountCourier, for centralized management of Windows NT, RAC/F and e-commerce applications, will cost $20 per user, while CertificateCourier, to support Entrust certificates, will cost $10 per user. www.courion.com

■ **NetVision** last week made available for free a set of scripts for its recently released **Policy Management Suite,** a real-time policy enforcement engine for **Novell's eDirectory.** The suite lets users set management policies while the scripts are used to automatically enforce those policies. The Visual Basic scripts are triggered when a change or update is made to a directory, file server or operating system. The latest scripts focus on correcting unauthorized changes to access control lists and passwords, establishing consistency in moving users, and automating the deletion of unwanted files, such as MP3 or AVI files. The scripts are available at www.netvision.com.

Start-up aims to keep users of rich media out of the poorhouse

■ **BY JENNIFER MEARS**

BURLINGTON, MASS. — For Nikon USA, flat HTML files were no longer enough for its product information Web site. The company wanted to use rich media — a combination of Flash animation, graphics and text — to make the site more compelling and easier to use.

The problem was that the life cycle for Nikon's products is between four and six months, and that meant the rich media would have to be updated frequently. Cost became an issue.

"We need to make a lot of changes on the site very quickly," says Jerry Grossman, vice president of Internet development for Nikon. "We also have a lot of accessories for our products, and we needed to find a way to put all of these accessories on the site, but to do it in a way that was cost-efficient."

Grossman found the way with a start-up called Concentric Visions. The software vendor is peddling a content management system called Dynamic Media Manager that's focused solely on rich media, combinations of various content such as Flash animation, graphics, audio, video and text. The idea, company executives say, is to let companies manage rich media files just as they would text files.

Today, rich media is typically handled as packages, and making changes requires developers to go in and play with the code. For Nikon, that meant going to its design firm, RedSky, for every modifica-

See Concentric, page 26

'NET INSIDER

Scott Bradner

Will we be able to restore in the future?

Verizon did an amazing job of partial restoration after the company's switching center at 140 West St. in New York was damaged and the switching equipment went down when the World Trade Center towers collapsed. But will Verizon or any other telecommunications company be ready to undertake the same sort of restoration effort in the future?

The Verizon center at 140 West St. is the telecommunications hub of lower Manhattan. From it, Verizon serves (or served) 4.5 million data circuits and 300,000 phone lines. In addition, a number of other telecommunications companies interconnected with Verizon's lines at the facility.

Within a week of the collapse, Verizon was able to pull together the resources, people, equipment and supplies to restore service to the New York Stock Exchange and some other customers. It is still working on restoring service to many other locations.

That Verizon was able to restore service is a legacy of decades of regulated monopoly operation. It had enough people to call upon to do the work and enough equipment and supplies (such as fiber-optic cable) stockpiled to make the work possible because the regulators supported the costs of the people and stockpiles in the rate structures Verizon has been permitted to charge. It is scary to contemplate what Verizon's readiness would be in a purely competitive environment. It costs a lot of money to be ready for disasters, money that makes it harder to compete for other companies that might not invest the same in preparedness.

There also is a network architecture factor here. The telephone network tends to be designed with relatively few big switching centers, because they are more efficient. If one of these centers is put out of commission, as 140 West St. was, large numbers of customers are affected. A more distributed network design with many more smaller switching centers would not be as efficient, but fewer customers would be affected by the failure of a switching center.

A more distributed network design with many more smaller switching centers would not be as efficient, but fewer customers would be affected by the failure of a switching center.

The original design of the Internet took this into account. One of the early design goals was survivability in the face of damage (see, for example, Paul Baron's work from 1964 at www.rand.org/publications/RM/RM3420/). There has been some move toward centralization within ISPs, but the redundant design of ISP networks tends to mitigate the effect of any specific outage.

The basic question for the future, both for traditional telecommunications companies and ISPs, is one of incentives. What types of incentives are needed to ensure the network designs are outage-resistant? And that the providers maintain adequate stockpiles of equipment and supplies, and that there are enough human resources to respond to a natural outage such as a hurricane or a man-made outage? And who is going to provide the incentives in this era of deregulation?

Telecommunications networks, including the Internet, are a foundation for much of our economy and society. Doing things in the most efficient way may not be the best path for us.

Disclaimer: Harvard understands that efficiency may not always be the best path, but the above is my path.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@sobco.com.

Hold Brothers

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method never told them immediately which users were taking up more than their share of bandwidth and to what site they were connected.

Now that they have NetScout probes plugged in, Lukas and his staff can monitor the "top 10 conversations," or users of the line, and take action when they see something that doesn't belong.

"The employees aren't doing anything wrong — this isn't about MP3 abuse. It was our responsibility to reengineer the applications so that when employees simply do their jobs, the bandwidth is used appropriately," Lukas says.

One thing Lukas would like to see improved with NetScout's products is "real-time expert analysis of packets at low speeds." He says no vendors seem to be able to perform this type of analysis at high speeds, though Network Associates' Sniffer can do it at low speeds.

Not only does Lukas track response time on internal applications, but he can also track how well an electronic communication network (ECN), an alternative exchange for Nasdaq stocks, responds to traders' requests. Hold Brothers' direct access traders can see all the ECNs simultaneously and choose to send an order to any of them.

"Now we can announce to our traders if there is slow response time with an ECN, because no one wants to send their orders to a slow ECN. The whole idea is being the fastest," Lukas says.

He says that because RTM "is extremely easy to use and completely unobtrusive to our network," remote staffers can monitor their own WAN usage and chase down bandwidth hogs at their locations, saving time for his staff. In the future, Lukas plans to further simplify WAN and LAN traffic monitoring by tying his NetScout monitors into the company's network management software, Hewlett-Packard's OpenView.

Lukas says the $300,000 investment in NetScout products is already paying off by saving him more than $1 million per year in T-1 costs. Depending on network configuration, the nGenius RTM software and products can cost as low as $15,000.

"It's one of the very few products, by far the easiest to use, that lets us see — workstation by workstation, line by line, address by address, and conversation by conversation — exactly what traffic is flowing over our LAN and our WAN," Lukas says. "It simply gives us visibility we've never had before."

NetScout: www.netscout.com

Concentric

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tion, and that was costly.

Cost is one of the reasons why only about 20% of businesses use rich media on their Web sites, analysts say. But that number is sure to grow. Meta Group predicts that by 2004, more than 80% of all Web sites will have rich media content.

"As the pipe widens and as organizations become a little more familiar with how to use content to good effect, they're slowly moving into using more types of rich media," says Evan Quinn, chief analyst at Hurwitz Group.

"The problem has been how do you commingle all this fancy stuff with your base Web content management system. That's the problem that Concentric Visions is really trying to solve," he says.

Dynamic Media Manager is based on patent-pending technology that breaks down complex rich media packages into objects at the presentation layer. That way, says CEO Garth Rose, pieces of rich media can be reused and updated without having to hard code changes. For example, the components of a Flash clip would be indexed in the Dynamic Media Manager, rather than the entire clip as a whole, making it easier to change different portions.

The Concentric software is loaded onto a Windows NT server. The company using it registers its rich media elements into the Dynamic Media Manager indexing and rules engine. Business rules are applied to the pieces to dictate how elements of the rich media should interact. The rich media files are stored in a SQL Server or Oracle 9i database, and the software hooks into a BEA Systems application server, Rose says.

Business users make changes to the rich media using a browser interface that is updated and configured as new rich media elements are added and as user access rights change.

The Dynamic Media Manager costs $50,000 for an enterprise license.

Concentric: www.concentricvisions.com

PROFILE: CONCENTRIC VISIONS

Location:	Burlington, Mass.
Founded:	January 2000
Business:	Content management software for rich media such as Flash, audio and video.
Founder:	Sundar Subramaniam, though no longer involved operationally. He also founded I-Cube, now owned by Razorfish, and Cambridge Technology Partners, now owned by Novell.
Financing:	$10 million in venture backing from Sigma Partners, GrandBanks Capital (in partnership with Softbank), I-Group/HotBank and Internet Business Capital.
Customers:	Include Nikon and the Department of Defense.
Fun fact:	Concentric Visions was hatched in a mansion, spent time in a turn-of-the-century Boston theater and is maturing in a 1980s high-tech office park.

More online!

Read more about the emergence of rich media.

DocFinder: 6661

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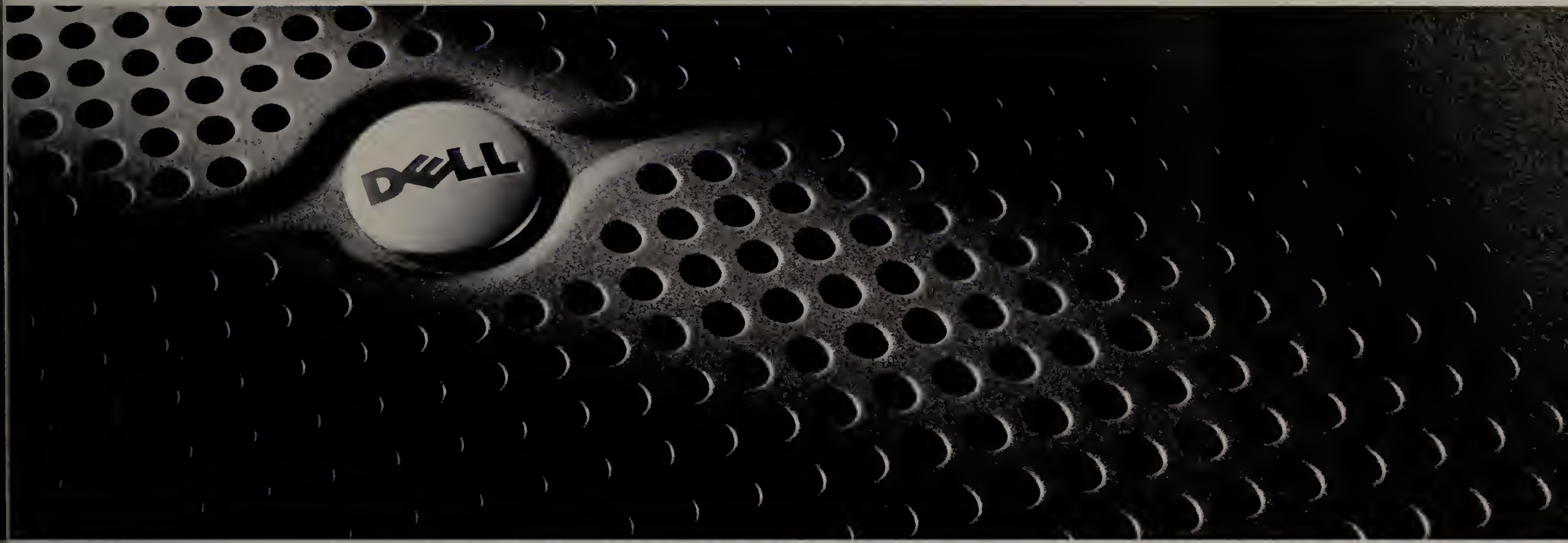

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Special Focus

NETWORK MANAGEMENT Combining software tools and network savvy can help to better plan networks.

Demystifying capacity planning

■ BY DENISE DUBIE

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By his own admission, John Payton used to plan network capacity for R.R. Donnelley by the seat of his pants.

"I knew how I did things in the past, and I figured if it worked once, it's worth trying it again," Payton says. "If we came up short, I'd just throw more bandwidth on the network. It really wasn't a scientific method."

But when the Chicago publisher changed its business model and expanded its services to include content management and digital photography, Payton realized even his best "educated guess" might not be enough to ensure the network could handle new bandwidth-hogging applications.

Payton is not alone. Historically, network architects would simply add more bandwidth to networks to improve performance when their businesses added more users and services. But Payton points out the art of capacity planning "isn't as simple as 'more is better.'"

There are many capacity planning tools on the market that collect network, system and application performance data — in real time or over long periods, or both (see graphic, right). Some software lets companies create model networks and simulate traffic to predict their bandwidth needs for future users and applications. The modeling tools let companies pose "what if?" scenarios to calculate how the network would behave in certain situations.

Predicting the net future

Most capacity planning tools fall into one of three categories. Here's a sample of what's available today.

Category	Statistical long-term data collection	Statistical real-time data collection	Predictive modeling
What it does	Collects historical performance data and spots net behavior trends.	Collects data in real time and predicts when (within 90 days) capacity will run out.	Creates virtual networks, simulates traffic and profiles applications to plan future net deployments.
What's good	Isolates network performance issues that can only be detected over time.	Solves more immediate problems.	Lets users pose "what-if" scenarios and prevent overprovisioning the network.
What's not so good	The software needs a lot of data to make intelligent decisions.	Doesn't address long-term capacity needs.	Can't predict with 100% accuracy how a network will respond under all conditions.
Who sells it	NetScout, Aprisma	Clairvoyant, Computer Associates	BMC, Opnet and Compuware

About two years ago, Payton and his team at R.R. Donnelley started using Opnet's software called IT Guru. He tested how new applications would behave on his network and determined exactly how much bandwidth he'd need. In the past, he would have made an estimate and doubled that number, but the software helps him determine more accurately what to provision.

Payton uses the software to analyze the response times of applications in the simulated network and determine how he could improve them, whether through server configuration or consolidation, adding bandwidth or rewriting an application.

Danny Gornell, chief architect at online brokerage firm Ameritrade, tells a similar story about building out his company's network when the economy boomed a few years ago. Gornell says he and his staff had to rebuild Ameritrade's infrastructure every nine months because their techniques for capacity planning fell short when predicting rapid growth.

"Our planning was done completely anecdotally. It was a seat-of-the-pants exercise that really lacked any analytical data," Gornell says.

Gornell and his staff started using BMC's two offerings that work together for capacity planning, Patrol Perform and Patrol Predict. He could determine the number of Web servers needed to support the expanding online business, without overprovisioning the network.

Mostly, BMC's software helped Gornell determine the number of servers he'd need to keep delivering business services, and the software predicts the impact of system changes before they occur. BMC software agents reside on each managed server and report application response time, CPU utilization and network availability. The capacity planning software then uses the data to project what will be needed to sustain future business services and users.

Now with the economy in the doldrums, Gornell says his days of overprovisioning have ended, and he's using the same tools from BMC to uncover underutilized resources and avoid purchasing more hardware. "Now we're using it in a diametrically opposed way. We're trying to consolidate our systems and servers, and still meet business objectives," he says.

Although Payton and Gornell say the tools have helped them better plan their networks, the two are quick to add that these software tools do not represent a cure-all for capacity planning woes. Capacity planning requires knowledge of how all the network elements interact and perform. That only comes from years of study and experience with networks.

"This is not a plug-and-play tool. It requires the right human resources and human interaction to do the correct analysis. It's not going to do the work of the engineers," Gornell says.

Payton likens his capacity planning tool to a Magic 8 Ball: "If you ask it the wrong question, it will still give you a nifty answer, but that may not solve your problem. You need to know the right questions to ask."

He says capacity planning is an art form — one that requires an artist skilled in advanced mathematics and statistical analysis, with an eye for spotting behavior patterns in volumes of data.

Industry experts echo those warnings and go a step further, explaining why the current capacity planning offerings will not solve many of a network executive's problems. Users have not expressed much interest in long-term planning tools, opting more for quick fixes that sometimes don't solve the problems and prompt network managers to overprovision their nets, says Jean-Pierre Garbani, an analyst at Giga Information Group.

Garbani says vendors will better address capacity planning in 2002. For now, he says only BMC comes close to helping network architects account for all the elements in a distributed environment when planning future nets. And although he says BMC has the capability to offer a complete capacity planning tool kit, its current products don't address all users' needs, partly because demand for such tools is low.

Capacity planning tools from vendors such as Computer Associates and Hewlett-Packard are fundamentally performance management tools with some extra reporting capabilities, Garbani says. Others such as Opnet and Compuware offer the modeling and predictive analysis he thinks is essential to capacity planning in large enterprise networks — but they look only at a single function, such as server capacity, application performance or WAN bandwidth.

Jeff Nudler, an analyst at Enterprise Management Associates, agrees there are no tools currently available that completely address capacity planning needs. He says network architects need to know in real time how to plan for capacity in their networks.

Clairvoyant's ForeCast Manager — software that collects real-time and historical data, spotting behavior patterns and offering fixes — most closely fits the bill for Nudler, but even this tool can only predict as well as the user can.

As Payton and Gornell say, the tools do not make decisions or do the planning. The tools expedite the collection of data from many disparate sources of an infrastructure and offer some correlation. But in terms of predicting the network future, the network architect in part controls the software's outcome.

"Capacity planning has long been considered the black magic of the IT industry. How does one predict the future?" Nudler says. "Even with all the tools, equations, algorithms and mathematics, it's impossible to calculate how a network will behave." ■

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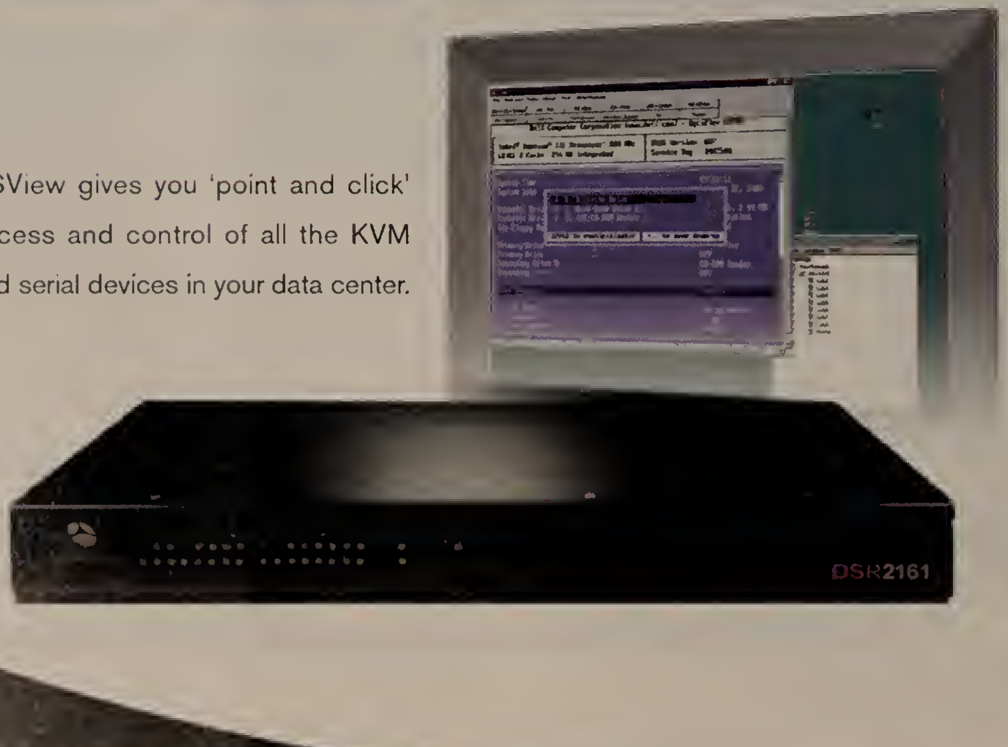

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ServiceProviders

- THE INTERNET ■ EXTRANETS ■ INTEREXCHANGES AND LOCAL CARRIERS
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Intel remains committed to hosting service

■ **BY JENNIFER MEARS**

SANTA CLARA — When Intel announced it was entering the managed-hosting game two years ago, financial analysts scratched their heads.

That skepticism still lingers for many, but company executives say they are committed to the Intel Online Services hosting venture, which in the last quarter signed Sony, the American Stock Exchange, Commerce One and the U.S. Army as customers.

"Initially, it's kind of hard to see what a company like Intel, which is essentially a [research and development], engineering and manufacturing company around chipsets would be doing getting into the services business," says Joel Yaffe, a senior analyst at Giga Information Group. "But if you take a step back and look at Intel as a company competing in an increasingly tough commodity market, a lot of people think services is the way to go."

Roots in the '90s

Intel latched on to the services bandwagon in the late 1990s as it began to move "from being at the center of the PC industry to being at the center of the Internet economy," according to its 1999 annual report. It formed the New Business Group to develop new ventures aimed at Internet services and products.

But as the economy softened this year, many of those ventures failed. In February, Intel shut down Intel Media Services, which was launched to host streaming audio and video. 1Cat, an e-commerce hosting service, also was shuttered in February. While some analysts expected the ax to fall next on Intel Online Services, the company shed some staff in May and kept going.

"We're in the process of building a strong business," says Mark Olson, Intel Online Services marketing director. "Times are really hard right now, and everybody is speculating what's going to happen. We're quite aggressively going after business."

Intel Online Services is waiving migration fees — up to $100,000 — for any business that moves to its data centers by Nov. 30. "We think we represent a much more stable environment than a lot of other hosters do today," Olson says.

Michael Osborn, vice president of sales and technology at eVineyard, saw Intel Online Services as a safe bet. The online wine retailer moved to Intel

See Intel, page 32

Intel steps into hosting

Here's how Intel Online Services has evolved:

September 1999
Intel Online Services launches with a full-service facility in Santa Clara and a development facility in Folsom, Calif.

April 2000
Data center opens in Chantilly, Va. Intel Online Services says it plans to have more than 12 Internet data centers online and invest $1 billion by year-end.

May 2000
Signs marketing agreement with PricewaterhouseCoopers; opens data centers in Seoul, Korea and near Reading, England.

July 2000
Unveils AppChoice Managed Hosting, a pretested hosting platform for managing applications.

August 2000
Opens data centers in Mumbai, India and Sidney, Australia.

2000

2001

October 2000
Joins with Beijing Telecom to provide hosting services in China.

November 2000
Teams with EMC and Akamai to provide storage and content-delivery services.

December 2000
Ends year with only eight of 12 planned data centers.

March 2001
Announces Intel Online Services ASP Accelerator Program.

July 2001
Teams with Commerce One to provide managed application services.

August 2001
American Stock Exchange selects Intel Online Services as its managed hosting provider.

Keynote launches wireless monitoring

New service fills void left by lack of service-level agreements.

■ **BY DENISE PAPPALARDO**

Keynote Systems is launching a new monitoring service, this time inspecting the performance of wireless — as opposed to landline — Internet service providers.

The Keynote Wireless Perspective service lets users better understand the performance over their wireless service provider's network, the company says.

Service-level agreements (SLA) for wireless Internet access or other mobile data services, such as Short Message Service, are not currently offered. To determine how these services perform, users must turn to third-party companies such as Keynote.

"Wireless data services are still new to users and service providers," says Chuck Mount, general manager of wireless products at Keynote. "There are a host of issues that can impact performance."

Keynote Systems is known for its landline Internet performance services, which monitor the speed, availability and reliability of ISP networks.

For the wireless service, Keynote is deploying software and hardware agents at 10 sites in the U.S. and the U.K. These agents can gather real-time information about how long it takes for a Web page or application to be displayed on a handheld device.

The agent imitates a typical wireless user. It sends and receives wireless messages, purchases items over the Internet, trades stocks or simply views certain Web sites. The agent gathers this information and sends it to Keynote's database system where the performance information is stored.

The system is also designed to alert users if transactions take more than a

See Keynote, page 32

Short Takes

■ **Sprint** revealed last week that it has completed its 10G bit/sec trans-Atlantic IP backbone connecting 11 major European cities to Sprint's SprintLink IP backbone in North America. Sprint will use the backbone to offer IP services to global corporations. Sprint's initial European products include IP VPNs, collocation services, managed services and security services. www.sprint.com

■ The Edison, N.J., school system has signed a three-year contract with **AT&T** to use its Integrated Network Connection Service (INCS). The service lets customers integrate voice, data and Internet access over one dedicated line. The public school system is connecting 105 elementary and secondary schools via AT&T's service. AT&T has provisioned INCS at 85 schools with 20 more expected to come online by the end of the month. www.att.com

■ Project Pronto, **SBC Communications'** effort to make high-speed Internet access available to 80% of its customers by the end of 2003, will be among the projects hit by capital expenditure cutbacks announced last week by the incumbent regional carrier. SBC will cut capital expenditures by about 20%, the company said after reporting a drop in net income and revenue in the third quarter compared with the year-earlier quarter. SBC currently can offer DSL to about 23 million customers across its service areas, or about 58% of its customer base.

EYE ON THE CARRIERS

Lisa Pierce

The demise of ION wasn't exactly a mystery

What went wrong with Sprint's Integrated On-Demand Network? Here is my take:

ION was only available in the continental U.S., where voice and data transport is ubiquitous, highly reliable and inexpensive.

The real need for a service like this is to connect with developing nations that currently lack those qualities in their voice and data transport services.

Compared with existing domestic transport services, it's virtually impossible for an ION-like service to save customers money, particularly when charging a premium for managing customer sites. This is especially significant because in many cases, customers found they continued to need non-ION local and long-distance services at ION-equipped sites, making it more expensive to manage these sites (they had to retain head count) not less.

As a managed, nontariffed service, calculating true costs and savings opportunities was also anything but simple and quick, and added to the cost of doing business.

My general rule of thumb is that companies should seriously consider switching providers or services if they will save 20% to 25% net in a contract period compared with renegotiating an optimized infrastructure using services already in place. If that much money cannot be saved, customer interests are often best served simply by issuing a request for proposal and/or renegotiating prices for existing services.

As a technology, ION attempted to encourage bundling of voice and data services, but failed to provide the risk-amelioration measures companies require in return. It lacked service-level agreements and was supported by a relatively small network infrastructure — 12 nodes.

Although an appropriate size for the customers it served, that size network is far too small for companies to move the bulk of their traffic onto. Too many eggs in too few (switching) baskets.

Finally, ION only supported a subset of pre-existing services, and customers want full backwards-compatibility with major transport services and features. ION's bandwidth was also not as flexible as customers expected, and as at least one competitor delivered (AT&T INCS).

Until it was far too late, Sprint continued to assume that large companies would rapidly migrate from their existing services portfolios to ION. In the history of telecommunications, such behavior would be a first. Businesses try new services and then use them very selectively before making big commitments. Migration periods can easily extend two to three years.

In contrast to T-1 sites, more than 90% of sites that used ION were DSL sites that often had unpleasant experiences using incumbent local exchange carrier service. This is a critical market, even for enterprise customers, because many telecommuters work for large companies. ION offered a viable solution, but the costs of implementing service were too high, making the payback too long.

Sprint has stated in plain terms that it will not support ION; existing users will be taken off the platform over an unspecified, but short, period of time.

My advice to affected customers is to expect Sprint to accommodate your specific migration plans and requirements, including obtaining favorable prices on existing services.

Think long and hard before agreeing to automatically extend contract term lengths in return.

Pierce is a research fellow at Giga Information Group. She can be reached at lpierce@gigaweb.com.

Intel

continued from page 31

Online Services last year after its application service provider, Pandesic — a joint venture between Intel and SAP — failed. Osborn says he wanted to stay in the Intel family and has few worries about Intel Online Services folding.

"We wanted to be with Intel, or a company like Intel, who had other business in addition to hosting," Osborn says. "Obviously time has demonstrated that having a diversified business is one thing that allows you to succeed when your customer base goes sideways."

Industry analysts say Intel Online Services may have what it takes to ride out the shaky economy and changing market landscape that has meant trouble for other hosters, most notably market leader Exodus.

For one thing, Intel Online Services has a parent with deep pockets. Another is that Intel launched its hosting venture focused squarely on managed services, which analysts say is expected to fuel market growth. Research firm IDC, for example, expects the hosting market to more than triple from $4.8 billion this year, to $16.1 billion in 2005, with as much as 80% of that revenue coming from managed services.

Intel provides managed services that are built on its extensive knowledge of network equipment and its experience hosting its own Web sites. The company offers preconfigured hosting platforms and collocation. A little more than six months after launching, Intel Online Services enhanced the services it offered by unveiling AppChoice, which lets customers integrate their applications into a pretested, managed platform.

Intel was the first hosting provider "to clearly articulate the 'repeatable elements/modular building block' approach to hosting," says Melanie Posey, program manager for Web hosting at IDC.

Another area where Intel made a smart decision was in the area of capital expenditures, analysts say. While other hosters, such as Exodus, continued aggressive build-out plans even as demand slowed, Intel Online Services scaled back.

In early 2000, Intel Online Services said it would spend $1 billion by year-end, mostly on building and equipping 12 data centers. It projected to have 20 data centers by the end of 2001. But when market conditions turned, Intel Online Services halted building plans. It ended 2000 with eight data centers in the U.S., Europe and Asia, and is holding steady.

"One thing to their credit is that they noticed early on that demand was slowing and they stopped their infrastructure buildout," says Jay Slattery, an analyst with Technology Business Research. "That's something that Exodus and some of the other major players certainly missed."

Still, Slattery and other analysts remain skeptical about Intel's foothold in the hosting industry. Intel is tight-lipped about its hosting division's performance, and analysts suspect the venture isn't making money. As for market share, one analyst calls it "micropercentages."

Andrew Shroepfer, president of Tier 1 Research, says because of the scarcity of concrete information about Intel Online Services' financial situation, it's hard to say whether the unit is something Intel should maintain. If it is discarded, Schroepfer says it would make sense for Intel to keep the testing lab that Intel Online Services uses to preconfigure and stress-test hosting platforms.

Nevertheless, Intel Online Services' hundreds of customers seem satisfied with the service they're getting.

"The fact is," says eVineyard's Osborn, "Intel Online Services is providing a great set of services." ■

> **"We wanted to be with Intel, or a company like Intel, who had other business in addition to hosting."**
>
> **Michael Osborn**
> Vice president of sales and technology at eVineyard

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Keynote

continued from page 31

specified amount of time.

The performance tests can be run every 5 minutes up to every hour depending on user requirements. The system works with 25 handheld devices, including Wireless Application Protocol-enabled phones, interactive pagers or PDAs.

Users can view real-time or historical data regarding network availability, usage and transaction performance.

The service is also geared toward wireless service providers and content-delivery service providers that are interested in keeping a closer eye on their network performance.

Earlier this year Keynote acquired privately held OnDevice, which developed the wireless monitoring technology that Keynote is using to support Wireless Perspective. OnDevice is now Keynote's wireless division.

The service is available now starting at $5,000 per month.

Wireless service monitoring

Keynote Wireless Perspective service let's users monitor the performance of their wireless Internet access service. The service includes:

- Performance monitoring over multiple wireless service provider networks.
- Measurements of Web page load and transaction times.
- Real-time and historical delivery times for Short Message Services.
- Wireless Application Protocol availability over multiple networks.
- System- and event-error alerts.

The price varies depending on the number of wireless networks to be monitored, the number of monitoring sites, the number of URLs that are measured, and the frequency that they are monitored.

Keynote: www.keynote.com

The Edge

■ SERVICE PROVIDER DEVELOPMENTS AT THE JUNCTURE BETWEEN THE ENTERPRISE AND THE NEW PUBLIC NETWORK

Softswitch heyday has to wait awhile

■ BY TIM GREENE

While softswitches are considered key to next-generation voice networks, their prime time is still at least a year away.

Softswitches — servers that control voice phone calls across circuit- and packet-switched networks — promise to support intriguing new services by dint of their open application programming interfaces for service software.

Softswitch vendor Sylantro's CallRio software blends voice phone service, Internet access and messaging. Customers connect to a Web site to see a list of who has called on the phone. Users click on the messages they want to return, and the network dials the calls for them. The service is available from GoBeam, a provider in California.

But the reality is that major carriers with wide serving areas will not use these switches to deliver new services for years, analysts say. Using softswitches as a replacement for current local voice switches is "a 2003 event at the earliest" for the regional Bell operating companies, according to a report last week by financial firm UBS Warburg.

"So far we are just in the early wave of this trend," says Tom Valovic, an analyst with market research firm IDC. He predicts incumbent carriers will start buying softswitches in bulk in 2002 and 2003. RBOCs and other major carriers have been hit by the downturn in the economy and are slowing network spending. Many competitive local carriers have folded or are in financial trouble, so RBOCs feel less urgency to change.

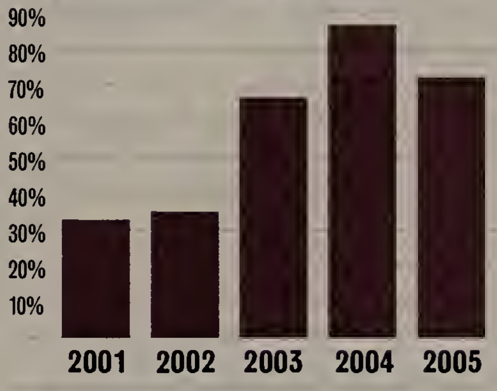
That doesn't mean softswitches are failing to make inroads. Level 3 Communications, the international IP network provider, says it will use Sonus Networks' softswitches to support its wholesale IP voice services.

Smaller carriers trying to build networks less expensively and compete with local phone companies are also drawn to softswitches. ACD.net, a service provider based in East Lansing, Mich., uses Convergent softswitches to trunk traffic today and plans to support voice services over DSL, a spokesman says.

Softswitches: Not yet

Annual worldwide sales of softswitches will soar from an estimated $610 million this year to $4.4 billion in 2005, but the heavy spending upturn won't kick in until 2003.

Projected annual percentage increase in softswitch sales:



SOURCE: IDC

The attraction softswitches hold is that they cost about a tenth of regular local phone switches, take up much less space, and have open APIs that let third-party vendors write complex services the switches control. They also enable completion of calls between circuit-switched and packet networks, letting carriers use a single packet backbone for voice and data traffic.

Because RBOCs still provide most local phone services, these telecom giants must adopt softswitches before advanced services become widely available, Valovic says. That migration will evolve slowly but has begun.

Recently, Qwest Communications and Verizon said they use softswitches in their networks. Qwest uses a Nortel softswitch to trunk voice traffic within its network in Boise, Idaho. Verizon uses Telica softswitches to handle data phone calls to the Internet, and BellSouth uses Sonus softswitches for the same purpose.

This so-called Internet-offload application is currently the most practical use of softswitches. Rather than spend millions to buy traditional circuit switches to handle Internet data calls, carriers use less expensive softswitches.

But this market is dwindling, USB Warburg analyst Nikos Theodosopoulos says.

"Internet off-load is today's opportunity, but it is in the late innings," he says in a report.

Only later will service providers use them as local or Class 5 switches to enable advanced services, Valovic says. But the RBOCs have not announced the decision to proceed in this direction.

In fact, at Verizon the jury is still out, says Brad Frison, a senior network planner at RBOC. ■

Short Takes

■ **Quantum Bridge Communications** last week announced partnerships with five **storage-area network vendors** to deploy storage services to companies. Quantum Bridge has aligned itself with Emulex, McData, Qlogic, SAN Valley Systems and Brocade Communications. Quantum Bridge claims cost barriers have prevented the mass rollout of managed storage services. Quantum Bridge will combine its QB8000 dense wavelength division multiplexer system with gateways, Fibre Channel switches and host bus adapters from their SAN partners. www.quantumbridge.com

■ **Storm Telecommunications**, a London service provider, is now offering VPN services based on **Riverstone Networks** switches in six European cities and New York. Storm has deployed Riverstone's RS 8600 switches for delivering Multi-protocol Label Switching-based VPN services at speeds up to 1G bit/sec to business subscribers. POPs in the pan-European ring are connected via optical routers from Sycamore Networks. Storm's MPLS VPN service is based on "Draft Martini," a developing standard for setting up VPNs on a Layer 2 Ethernet network with MPLS tags used to differentiate customer traffic flows and provide security. The Draft Martini software runs on modules in the RS 8600s. www.stormtel.com, www.riverstonenet.com

Alcatel upgrades multiservice switch

■ BY JIM DUFFY

Alcatel has unveiled a new release of its 7670 Routing Switch Platform that features upgraded scalability, support for Multi-protocol Label Switching and low-speed multiservice data interfaces.

The 7670 is an ATM edge and core switch that goes up against ATM switches from Lucent, Nortel, Cisco and Marconi, and start-ups Equipe Communications, WaveSmith Networks and MPLS core switch maker Tenor Networks.

Release 2 of the 7670 lets the switch scale from 2.4G bit/sec for edge applications to 450G bit/sec in the core when fully configured with four shelves, Alcatel says. The switch had been limited to 50G bit/sec for core applications.

In a single-shelf configuration, the 7670 supports 224 OC-3c or DS-3, or 56 OC-12c, or 14 OC-48c or 56 Gigabit Ethernet ports. Fully configured with four shelves, the 7670 sports 1,760 OC-3c/DS-3, 440 OC-12, 124 OC-48c or 440 Gigabit Ethernet ports.

MPLS support means the 7670 can now provide MPLS mediation, label edge routing, label switch routing and ATM switching on one platform. MPLS mediation is in the form of a gateway that lets ATM traffic be carried over an MPLS packet core using label switched paths.

The introduction of the Edge Services Extender brings low-speed T-1/E-1 and T-3/E-3 multiservice interfaces to the 7670. The switch can support up to 500 DS-1s for edge aggregation.

Some analysts gave Release 2 only a lukewarm reception. Alcatel won't ship RSP until March 2002, and true 450G-bit/sec capacity won't be seen until the vendor fits the system with 10G bit/sec OC-192c interfaces later on.

"General availability is quite a ways away with time for things to potentially go wrong or for competitors to respond," Current Analysis said in a recent report. "If this was a release, rather than an announcement of a planned future occurrence, Release 2 would put Alcatel in a solid competitive position today with the competing platforms from established vendors, but the system is at a scalability disadvantage compared to some start-ups." ■

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Technology Update

AN INSIDE LOOK AT THE
TECHNOLOGIES AND STANDARDS
SHAPING YOUR NETWORK

SMP boosts scalability for net elements

BY PAUL LEROUX

High-end network elements are starting to have trouble delivering the sheer processing power demanded by the bandwidth explosion.

For instance, in core routers the control-plane CPU must now maintain a routing table of 500,000 or more entries, using compute-intensive protocols such as Open Shortest Path First. On top of that, the CPU must perform administrative and management functions, process SNMP packets, download new routes to each line card and support operator consoles.

Problem is, many control-plane CPUs have hit the wall.

Can newer, faster CPUs address the issue? Not likely, because computational demands are accelerating faster than CPU performance. Consequently, many systems designers are attempting to distribute the workload across multiple CPUs, using symmetric multiprocessing (SMP).

SMP lets multiple CPUs share the same board, memory, I/O and operating system. Nonetheless, each CPU in an SMP system can act independently. While one CPU handles a database lookup, others can update the database and perform other tasks.

SMP costs relatively little. When scaling from one CPU to two, only one processor board is needed. Processing power is doubled without paying for additional support chips and without taking up an additional slot in the chassis.

Using a microkernel architecture for the operating system fits nicely with SMP. Compared with a monolithic operating system kernel, a microkernel is extremely small, because it contains only essential services, such as process scheduling. All other services run as separate, memory-protected programs. As a result, the kernel modifications for SMP are also small: just a few kilobytes of code. Only the microkernel is modified. All other services and applications can gain the performance advantages of SMP without code changes. For instance, a router vendor can develop an application once, then deploy it across a product line that includes single-processor and SMP systems. Scalability is built in.

Availability also gets a boost. Because drivers, protocols and applications all run as memory-protected programs, they can't corrupt the kernel or each other. If any software process misbehaves, it can be automatically restarted while all other services continue to run.

Despite its benefits, SMP can only scale so far. Bottlenecks can occur when several CPUs on a board share a single memory bus. Rather than put too many CPUs on the same SMP board, designers of high-end network elements can distribute applications across a networked cluster of SMP boards, where each board has its own memory array, I/O and operating system.

This approach has its challenges. For instance, network managers have to add network-specific code to applications so they can "talk" to each other across the networked boards. Also, because drivers and protocols in most operating systems are bound to the kernel, moving any of them from one board to another means you have to create and carefully test a new kernel image for each board.

A microkernel operating system sidesteps these problems in two ways. First, because applications, protocols and drivers are all decoupled from the operating system kernel, they can be moved freely from one CPU board to another; without the need for kernel reconfiguration. Second, applications in a microkernel operating system typically communicate via message passing, which eliminates the need for network-specific code.

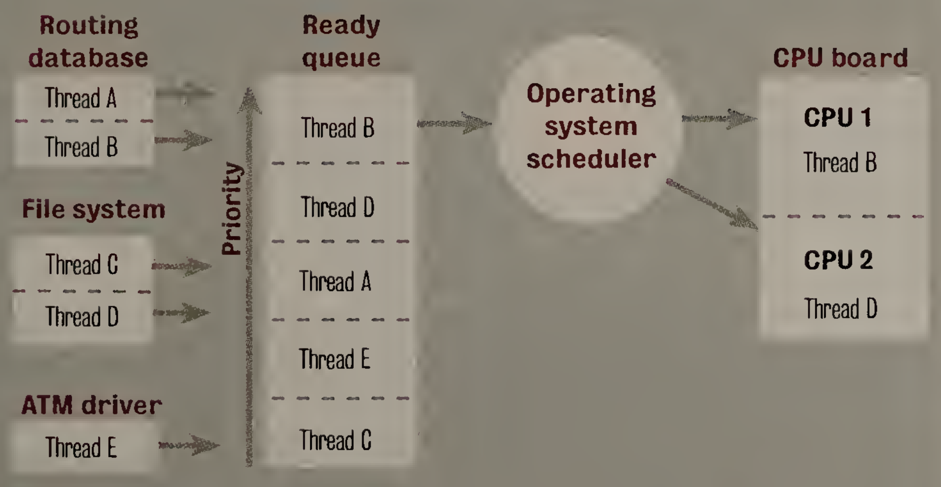
The bottom line is that SMP hardware and microkernel operating system architecture allow vendors to add processing power — and scalability — to their network elements without adding software development or compromising system density.

Leroux is a technology analyst at QNX Software Systems. He can be reached at paull@qnx.com.

HOW IT WORKS

Symmetric multiprocessing

With SMP, the control plane of a network element can run many tasks, or threads, simultaneously, using a single CPU board. Performance is improved dramatically, as is system density.



❶ Several threads become ready to run.

❷ The threads are queued according to their priority.

❸ If there are more ready threads than CPUs, the operating system scheduler will use thread priority to decide which one runs first.

❹ Multiple threads run simultaneously, one per CPU.

Ask Dr. Internet

By Steve Blass

Regarding your Oct. 8 "NAT woes" column (www.nwfusion.com, DocFinder: 6665), there is an easy solution if you are using the Cisco PIX firewall. The alias command intercepts a DNS response with a network address translation (public IP) address and replaces it with the private address of the server.

Many readers pointed out that NetBIOS name look-ups are a bad long-term solution. One reader said outbound packets would never show up again coming into the external interface so the IP spoofing comment was incorrect. Internal DNS was the most recommended solution, and I received multiple explanations of the Cisco alias command. Our original questioner installed an internal DNS server for the growing intranet domain and solved the name resolution problem that way.

The Cisco alias command provides a solution for redirecting an internal connection request to the internal address through a process called "DNS doctoring," in which the firewall router replaces the global IP address with the internal IP address. The alias command can also be used to perform destination NAT translation. Use this when the Web server is located on the demilitarized zone segment off of the firewall router rather than on the internal segment. Details are available at www.cisco.com/warp/public/110/alias.html.

Blass is a network architect at Change @Work in Houston. He can be reached at dr.internet@changeatwork.com.

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OCESSING IS MANUFACTURING ON A GRAND SCALE.

GEARHEAD
INSIDE THE
NETWORK
MACHINE

Mark
Gibbs

Less wires, more connections

Where did we leave it last week? Oh yes, driving around town snooping for 802.11b wireless Ethernet networks. We discovered 12 unencrypted networks, and we suspect that most were left open by accident rather than by intention.

Wireless networks are often left unsecured because people simply don't understand what they're doing. The default setup for the majority of wireless network products doesn't include security. This means outsiders can connect simply by bringing their wireless-enabled PC within range and, if the networks are using Dynamic Host Configuration Protocol, refreshing the dynamic IP lease (see ww.nwfusion.com, DocFinder: 6666).

If the networks aren't using DHCP, with knowledge you gain using Netstumbler (see www.nwfusion.com, DocFinder: 6667), you can try the default addresses offered by the vendor of the discovered 802.11b network access point, or try scanning likely IP address ranges. Finally, you can "sniff" passing wireless data with a protocol analyzer to find out what address ranges are being used (we'll discuss this next week).

So are improperly secured wireless networks a problem? According to Gartner, by the end of next year 30% of companies will "suffer serious security exposures from deploying WLANS without implementing the proper security."

Yep, we can believe that. Particularly as wireless LAN cards are plummeting in price (they are less than $100 now) letting corporate users easily install unsecured WLANs at their houses that expose everything on their work PCs when they are home! Or even more dangerously, they bring their wireless-enabled PCs into their offices and plug into the corporate net.

This is where wandering around with a copy of Netstumbler regularly, say, once per week, might just let you plug a gaping wireless hole in your corporate network. You should also consider updating your acceptable use policy to highlight and define the issues of wireless networking. Even consider running briefing sessions for the staff so they can't say, "Gee, I didn't know . . ." after they make your sales plan and corporate budgets available to the competition simply by parking outside your offices for 10 minutes.

But while many wireless networks may get left open by accident and negligence, there is an important social trend emerging: public access wireless networks. These are networks that are intentionally left open and unencrypted as either a for-fee or for-free public service.

For-fee wireless nets are now in many hotels and other public places, including many Starbucks locations, particularly in the Northwest (www.mobilestar.net/locations/page6a.asp?paltype=SBUX).

Leading vendors in this market are Mobilestar (www.mobilestar.net/, which supplies the Starbucks connections) and Wayport (www.wayport.com/). Pricing for unlimited use of Mobilestar connections is $59.95 per month, while Wayport charges $49.95 per month for unlimited access. Unfortunately, Mobilestar has hit a financial iceberg and looks to be sinking.

On the other hand, Wayport seems to be doing well. We tried a Wayport connection at the Four Seasons Resort in Santa Barbara, Calif. (www.fourseasons.com/santabarbara/) and were very impressed. When you first connect to the Wayport network, any URL you request returns a default page letting you log on.

Once authenticated, the Wayport system assigns you an IP address and lets you browse the Web, get and send e-mail, and use, as far as we could determine, pretty much any IP protocol. Very slick.

But as we noted earlier, there are many networks that are not only open but also provide completely free access. That's right, completely free! Why? Because they want to. Just as people put up free dial-up bulletin board systems in the late '80s and early '90s, so gearheads everywhere are now providing free 'Net access for passersby.

Groups encouraging and sponsoring the free wireless nets are springing up all over. There's NYCwireless in New York (www.nycwireless.net/), Bay Area Wireless User Group (www.bawug.org/), Seattle Wireless (www.seattlewireless.net/), Consume the Net in the U.K. (www.consume.net/) . . . the list is getting pretty long. See Personal Telco at www.personaltelco.net/ for lots of links and news on what we believe will be a huge trend.

A word of caution: If you use one of these public networks makes you disable all of your Windows shares and run something like Zonealarm (see www.nwfusion.com, DocFinder: 6668). If you can see the network, the network can see you, and you wouldn't want just anyone messing around with your files.

Next week, diagnostics and antennas . . . connect for free at gearhead@gibbs.com.

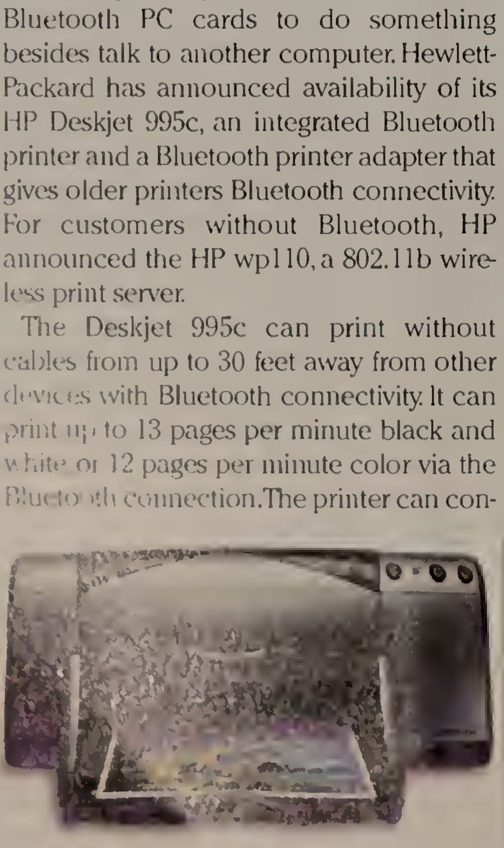
Cool Tools

A roundup of the latest neat stuff
Compiled by
Keith Shaw

HP ships Bluetooth adapters, printers

You may finally be able to use those Bluetooth PC cards to do something besides talk to another computer. Hewlett-Packard has announced availability of its HP Deskjet 995c, an integrated Bluetooth printer and a Bluetooth printer adapter that gives older printers Bluetooth connectivity. For customers without Bluetooth, HP announced the HP wp110, a 802.11b wireless print server.

The Deskjet 995c can print without cables from up to 30 feet away from other devices with Bluetooth connectivity. It can print up to 13 pages per minute black and white or 12 pages per minute color via the Bluetooth connection. The printer can connect with wires via a Universal Serial Bus interface and also via an infrared interface. The 995c costs about $400 and is available now.



HP Deskjet 995c

The Bluetooth printer adapter supports several HP LaserJet, Deskjet and PhotoSmart printers (check www.hp.com for a full list), and connects to the parallel port for its connectivity. The adapter is actually a third-party product from MPI Tech Data and is distributed by HP. The adapter costs $129 and is available now.

The wp110 lets you connect a printer (via parallel port) to areas where you can't run cables, and provides WiFi (802.11b) connectivity to those printers. It costs $300, and will be available next month.

Olympus C-3020 Zoom

3.2 megapixel camera for $500

Olympus has announced the C-3020 Zoom 3.2 megapixel camera, a digital camera that will cost $500 and will be available in November. The camera's new features include a noise-reduction system, which aims to give cleaner colors and sharper pictures. When activated, the system automatically compares the original image with an image taken immediately after the first exposure with no light. The camera then compares the images and cancels background "noise" in the original to create a clearer picture. The camera has a 3X optical zoom lens, with a continuous 2.5X digital telephoto, as well as a six-mode flash with red-eye reduction mode. It also includes a 16M-byte SmartMedia card, USB cable, carrying strap, lens cap, four AA batteries, Camedia Software Version 2.5 and remote control. More information is available at www.olympusamerica.com.

Turn your Visor into a massager

If you've ever wanted to get a massage while checking your next appointment, you're in luck. Raynet Technologies has launched the Raycom Personal Massager, a Springboard module that converts a Handspring Visor into a massaging device while maintaining other operations. The snap-in module lets you massage muscles while working, reading or relaxing. The module works through two gel pads that you attach to your body. It comes with three massage modes, — squeezing, chopping and tapping — and three programs for the back, shoulders, arms and legs. The device also includes software so you can adjust frequency, modulation, burst, pressure and duration. Future free downloads of new massage modes and software will be available. The device has more than three weeks of battery life under normal usage. It costs $100 and is available at www.raynet-tech.com.

It's module madness!

Handspring wants more people to buy Springboard modules. As an incentive, 10 developers are offering a 20% instant rebate on 23 Springboard modules on PalmGear (www.palmgear.com/hs) until Nov. 6. The developers include Arkon (Arkon Parafone), Card Access (ThinModem and ThinModem Plus), Franklin Electronics (reference modules), Hagiwara (back-up and Flash modules), Infinity Softworks (calculators), Innogear (miniJam MP3 player and Innopak 2V modules), Karrier Communications (Intelligolf module), PalmTop (V-Rally), Pocket Express (entertainment pack, recipes, chess and dbNow modules) and Xircom (wireless Ethernet module and 56K bit/sec modem module).

Send cool product info to kshaw@nww.com.

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EDITORIAL

John Dix

Do customers a favor: Squeeze images

Those of us in high tech tend to forget that the Web is a different experience for the average Joe sitting behind a 56K bit/sec modem. The only time we suffer that indignation is when we're on the road, but even that is becoming less frequent now that hotels are adding Ethernet ports.

The bane of speed for most commercial Web sites is, of course, images. Those big, fat JPEGs and GIFs slow downloads to a crawl. While DSL and cable modems will ultimately let the masses speed through your site, broadband penetration is still woefully low — 10% by some calculations.

I ran into a new company at the recent Gartner Symposium in Orlando that has an interesting compression algorithm that may help. Airzip says its technology can reduce JPEGs by 45% and GIFs by up to 86%.

The heart of the system is a $5,000 software compression engine that plugs into Microsoft's Internet Information Server (versions for Apache, IBM Websphere and BEA Weblogic will be available early next year). Complementing that is a 250K-byte decompression client users download for free.

Part of the beauty of the system is that it is transparent. Web content is stored as usual and when an Airzip client calls for it, the images are converted on the fly to what the company calls AZV and hurried along.

As an example of how this might help companies, Director of Product Marketing Doug Keiller says a large grocer retailer in Europe is considering using the product because a 250K-byte Web page that takes 30 seconds to download using a 56K bit/sec modem can be squeezed down to 80K bytes and delivered in 10 seconds. Twenty seconds doesn't sound like a lot to save, but when a customer has to slog through multiple pages to shop, it adds up quickly.

You can see the technology at work by checking out a demo at www.airzip.com/demo. The demo button downloads the client and then lets you access different types of images, including samples of X-rays, security pictures (fingerprints, mug shots and camera images), and field force automation tools such as maps and schematics.

Keller says the technology will be particularly compelling where the client doing the calling is a handheld — phone or PDA — on the other end of a slow wireless link.

To get the customer experience, get off that fat pipe at work and try it using a modem. Impressive. Anything that can speed image delivery has to be viewed as a win by customers.

— John Dix
Editor in chief
jdix@nww.com

opinions!

Palm reading

In the "How we did it" story to your Internet-enabled wireless device shootout (www.nwfusion.com, DocFinder: 6554), your consultants say Palm-based wireless devices should be treated as variants of a Palm VII. This is not true.

Earlier this year I replaced my Wireless Application Protocol (WAP) phone with the Kyocera Smartphone. Nearly all of my phone use is based on Eudora Web browser and e-mail, and Avantgo, none of which run wirelessly on a Palm VII. I rarely use the Palm VII compatibility features because they are so limited. Prior to purchasing the Smartphone, I used the OmniSky service for a year, and again I rarely used Palm VII-based features.

Unlike the other devices in the survey, the Palm platform offers a range of wireless solutions. It's a shame that your consultants chose the least functional of them.

Tim Hunt
Jersey City, N.J.

Editor's reply: We chose the Palm device as the representative of the Palm OS category because it is the de facto standard. The purpose of the tests was to compare categories of devices — WAP phones vs. Palm OS devices — and not individual devices within a category (such as Kyocera vs. Palm VII).

We also created an interactive Buyer's Guide that includes data on far more devices and services than we could include in our tests. Go to www.nwfusion.com, DocFinder: 6555.

What it takes

In the story "Five technologies with legs" (www.nwfusion.com, DocFinder: 6556), Eugene Spafford of Purdue University says, "It's likely to take outside pressure from government or something along the lines of a consumer boycott before industry will spend the time and money to adequately address the issues raised."

The consumer boycott is already happening. Prices are falling and so are consumer purchases. And the industry can't figure out that consumers are full to the gills with fighting off spam, pages that won't load on their machines because of Flash advertisements and the constant drumbeat of virus Trojan worms coming to eat their machines.

What does it take for the industry to catch on?

Jim Pivonka
La Crosse, Kan.

Remote support

Regarding Mark Gibbs' Backspin column "IT will never be the same again" (www.nwfusion.com, DocFinder: 6557):

Restore multiple local backups from a remote location? Is Gibbs crazy? Whoever performed the local backup can perform the local restore, and a policy that lets laptop users back up their own data is lunacy at its finest.

Supporting remote users is just as easy as supporting local users. Gibbs assumes that the standardized tools today's teleworkers use will be the same tools that we use in the future as the demand increases, but the tools will change to support any type of structure that is deemed necessary.

No, I'm afraid that we won't be overworked. We will find the easiest solution and use as many shortcuts as possible. We will probably have an easier time supporting massive amounts of remote users, because they won't take the time to phone or e-mail us for help if they can figure out the solution on their own in 5 minutes.

Robert Geach
Atlanta

E-mail letters to jdix@nww.com or send them to John Dix, editor in chief, Network World, 118 Turnpike Road, Southborough, MA 01772. Please include phone number and address for verification.

More online! **www.nwfusion.com** Find out what readers are saying about these and other topics. **DocFinder: 6622**

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When we return...
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More on the Microsoft-Sun melee...
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MANAGEMENT MODE

Jeff Shapiro

Role models for uncertain times

Uncertainty. It's a word we live with every day in this business. Market conditions, business activity, expansion, contraction, mergers, sell-offs and crises all combine to make IT a whirlpool of constantly changing parameters, and we're expected to recognize and support those changes. Sometimes we're even the agents of change ourselves.

The events preceding Sept. 11, the horrific acts on that day and the unfolding story of the past month have forever changed America. Now everyone everywhere has had to deal with uncertainty as part of everyday life. In 90 days we've seen not one but two stock market crashes and recoveries, a massive terrorist attack on American soil, and a culture that responded by knitting together in a way not seen since World War II. We've learned the hard way, in pocketbook and in mind, that we are not invincible.

Believe it or not, we in the IT community are the role models now. During the protracted stock market decline most of us had hands-on practice in uncertainty management, slashing and realigning budgets to match the new market reality. On Sept. 11, the unthinkable became all too real as hundreds of us perished that day, and thousands more were called to the hardest service they will ever face: bringing up back-up processing centers, knowing that the people who ran the main ones will never be there to help again.

We've been there before, though. Floods, hurricanes, earthquakes and man-made disasters have brought many of us to the limits of our capabilities and endurance. Our skill of bringing shape back to chaos is now sorely needed in our jobs and communities. Even as our great nation stands up to battle an equally great evil, so must we stand up where our skills are needed, because here is the defining line between managers and leaders.

If a leader sees something that needs doing, he or she does it. They don't wait for someone else to come along, because that someone else isn't coming. Most people don't have the training to see the problem, and the ones who do are already busy, so now it's your turn. Just as in the office, lead by example. If your cause is just, if the task is necessary, others will come to help. And don't fault them for not being there first. Leaders need followers, who provide the strength and bulk of numbers to make things happen. Don't give in to anger; use its energy to fuel your volunteer work at an organization that needs your mind and dedication to serve those who serve us.

Finally, there are those among us who, when called, quietly put down their keyboards, donned a uniform and went to serve our country. To those people I say "God speed and God bless," and I hear the echo of thousands behind me.

Shapiro is a writer and consultant on IT management organization and best practices. He can be reached at jshapiro@chartertn.net.

Our skill of bringing shape back to chaos is now sorely needed in our jobs and communities.

YANKEE INGENUITY

Howard Anderson

A tale of two countries

Last month I went to Puerto Vallarta, Mexico to keynote the Telefonos de Mexico annual users meeting. You know the drill — alleged expert in all things network gets up in front of senior management of the major customers and demystifies where telecommunications is going and how smart companies are building new businesses based on advanced data communications and kicking the crap out of their competition. This group was small but potent, representing 25% of the Mexican GNP.

By my count I have done this speaking drill about 150 times; I don't think there's a user group in the communications industry I haven't addressed. The trick: Understand what issues the smartest users have, and tell company management what they must do to keep the loyalty of their most important customers. These meetings are always held in some golf resort where management can "bond" with customers. At one meeting, the CEO suggested I cut my insightful presentation short because, "We are here, Howard, to play golf with our customers. If our technology isn't too bad, we will do $2 billion with this group. Our tee times start at noon; I know you will be done by then." (It was 11:45 a.m. when he passed this suggestion to me.) On the other hand, I have more golf shirts with company logos than Tiger Woods.

There is always a hidden agenda at these user meetings. It's usually "How good it's going to be," with statistics citing the number of homes with broadband access, the growth of T-1, and examples of how the best-run companies are leveraging network technology. Outside the U.S., the hidden agenda is to explain what the best-run companies such as Wal-Mart, Citibank or eBay are doing, and why the users' companies should emulate these best practices.

But I quickly realized that Telmex wasn't behind the rest of the industry — it was in front. Furthermore, the company looked very familiar to me, but I couldn't quite figure out why. Then I realized that it was just like a company I used to know well — AT&T before divestiture. Telmex was once government-owned but has been privatized for the past 10 years. Yes, there is competition, but Telmex has 97% of the local market, 70% of the long-distance market, and 60% of all calls originating from Mexico.

Sound familiar? All the cellular companies, ISPs and competitive long-distance companies pay Telmex to complete calls over its networks, and interconnect traffic is growing 40% to 45% per year. Telmex takes 25% of its revenue to the bottom line; its margins are twice what most telecom companies earn. Any wonder why Bell South and SBC lust after this market? Data services will hit $1 billion this year, but I expect them to quadruple by 2006.

A monopoly is a beautiful thing to behold — unless you are a customer and are overpaying and getting bad service.

Contrast Telmex to AT&T. I recently paid my semiannual call on Mike Armstrong. AT&T has a long-distance business that decreases each year and looks every day like a pure commodity, one with more competitors than you can shake a stick at; a cable business that is for sale; absolutely no local telephone business; and stockholders who have gone from sullen to mutinous.

In the U.S., we have had 300 competitive local exchange carriers funded, now starving for capital with a nonexistent, junk bond market. We have overleveraged balance sheets and flawed business models. We have had too many companies with excess capacity pricing their services below cost, which destroys the margins for the incumbents.

The difference between us and Mexico? We believed in competition and deregulation — good for the consumer, bad for the incumbent carriers. Mexico never really believed in competition and deregulation, so they did as little as possible, as loudly as possible.

So Armstrong loses even more hair and has to get up two hours earlier to get his worrying done. Telmex's Carlos Slim, Latin America's richest businessman, aggressively has stayed efforts to regulate his company more tightly. Mexico's telecom market is growing at 30%. Telmex just got a 6.5% tariff increase and is on a roll.

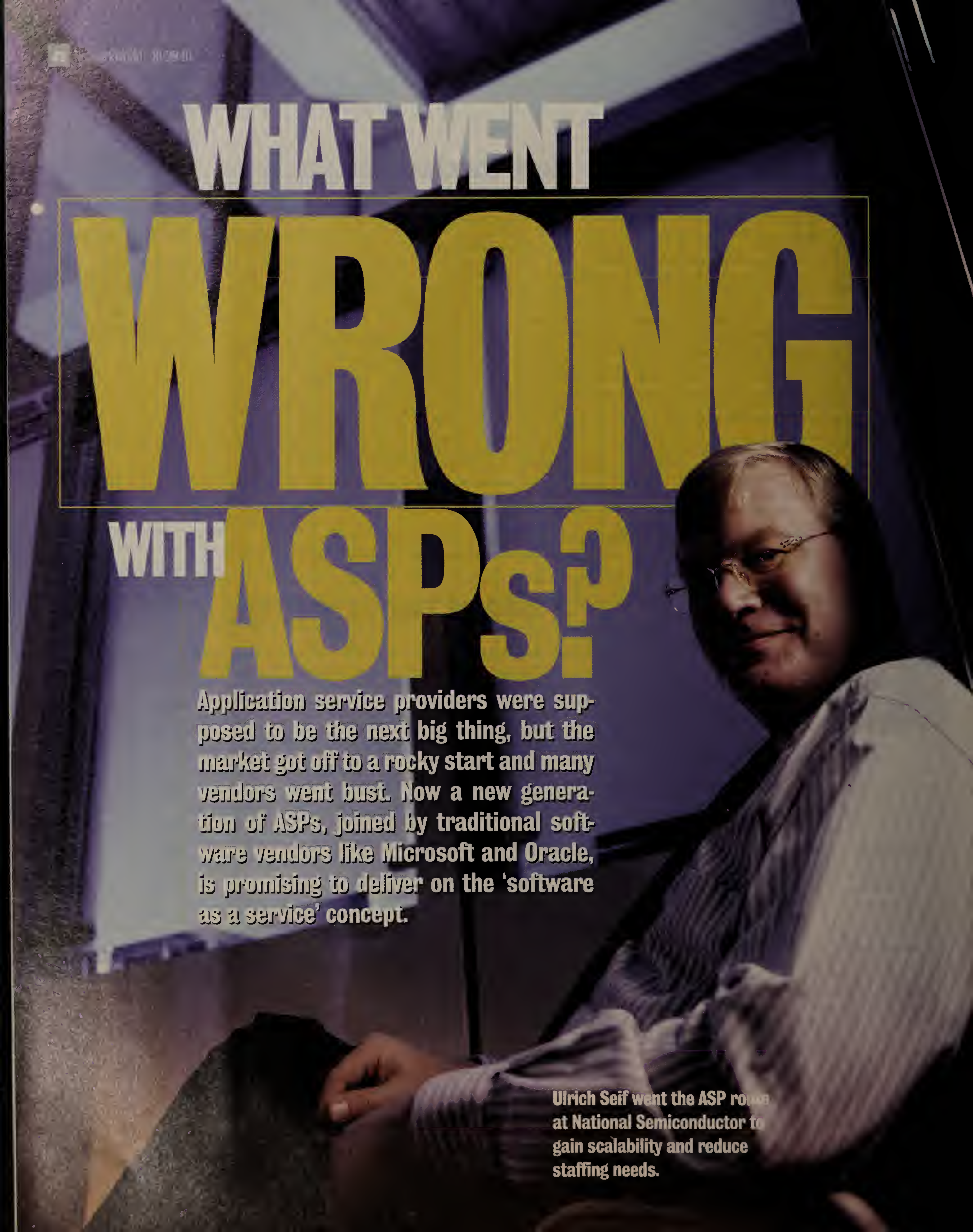
Who would you rather be, Carlos Slim or Mike Armstrong? And who do you think sleeps better at night?

Anderson is senior managing director of Yankeetek Ventures, a Cambridge, Mass., venture incubator. He can be reached at handerson@yankeetek.com.

Who would you rather be, Carlos Slim or Mike Armstrong?

WHAT WENT WRONG WITH ASPs?

Application service providers were supposed to be the next big thing, but the market got off to a rocky start and many vendors went bust. Now a new generation of ASPs, joined by traditional software vendors like Microsoft and Oracle, is promising to deliver on the 'software as a service' concept.



Ulrich Seif went the ASP ro[illegible] at National Semiconductor t[illegible] gain scalability and reduce staffing needs.

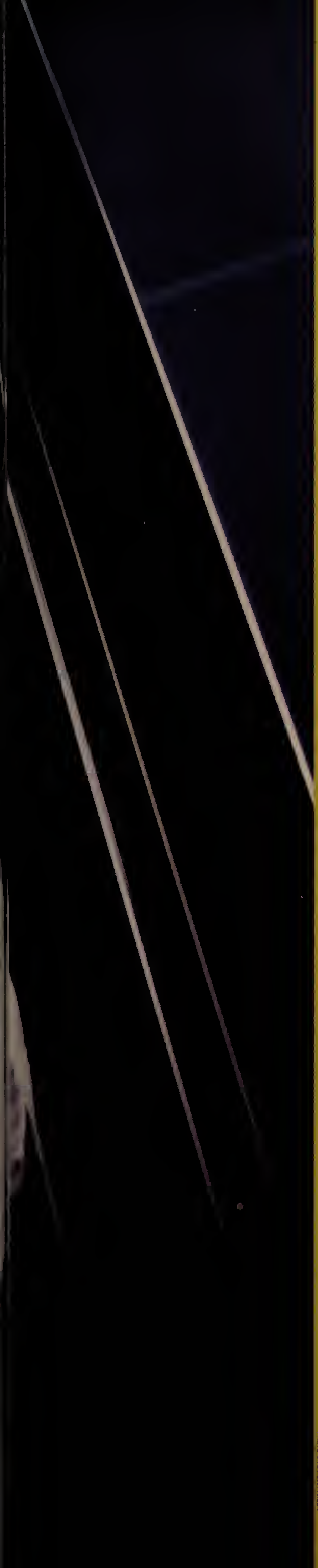


PHOTO ERICMILLETTE.COM

BY JENNIFER MEARS

From the start, the premise was simple: to deliver hosted applications over the network to customers. Application service providers jumped into the market in droves to cash in on what was expected to be a gold mine. During the ASP frenzy of 1999, Dataquest predicted ASP revenue would top $22 billion by 2003. But hitting it big as an ASP wasn't so easy.

"Everybody expected this to be instantly adopted, that customers would just stop dead in their tracks and say, 'Wow! This is what I've been missing all my life!' — like a revolutionary kind of thing," says Laurie McCabe, vice president and service director at Summit Strategies. "But very few things are revolutionary. Most things are evolutionary. And what we're seeing is the evolution of the industry."

Evolution means change, and in the ASP market, change means consolidation. Dozens of ASPs are struggling or going out of business. Those failures — including the Intel and SAP venture Pandesic, and more recently, ASP pioneers Breakaway Solutions and FutureLink — are making an already skittish customer base even more wary.

However, at the same time, hundreds of companies are happily using hosted applications. And although the ASP market hasn't come close to reaching the lofty initial projections, it's still strong. According to Gartner, ASPs pulled in $2.1 billion in 2000, and worldwide ASP revenue should hit $7.4 billion by 2003.

The ASP industry is experiencing growing pains common to any emerging technology as IT executives slowly warm to the idea of changing the way they do business. The difference is that instead of providing a tangible product, ASPs are delivering a service that is somewhat difficult to define. Add to that the inherent complexities of remotely delivering applications designed for a client-server environment, and the troubles quickly mount. Nevertheless, the notion of software as a service is here to stay. The question is which vendors will figure out the winning way to deliver that service.

Growing pains

ASPs emerged during the dot-com boom when capital was easy to get and business plans consisted of little more than a "build it and they will come" philosophy. But demand didn't take off quickly enough, and many ASPs were stung by their lack of focus.

"Most ASPs tried to be everything to everybody," says Lew Hollerbach, managing director of service providers at Aberdeen Group. "You cannot go into business these days and have the sort of 'throw anything against the wall and see if it sticks' approach. It just doesn't work. You have to have focus."

For example, Pandesic was highly touted because of its founders Intel and SAP, but when Pandesic couldn't make the transition from delivering e-commerce applications to dot-coms to servicing larger companies, the venture folded.

Such failures have scared many firms away from considering ASPs. But IT executives who have successfully used ASPs advise their peers against ruling them out.

For example, National Semiconductor calls its ASP rollout a definite success, says Ulrich Seif, CIO for the Santa Clara manufacturer. Last year, National Semiconductor decided to shift its IT operations and thought ASPs could save money by offering scalability and reducing staffing needs.

"We wanted to explore if the ASP model was viable. To really test the model, we had to find out if we could put a key application like our finances on an ASP," Seif says. That worked OK, and Qwest Cyber.Solutions (QCS) now hosts National's 10,000-seat SAP human resources package and a SAP financial package that's accessed by about 500 users.

Another ASP convert recommends doing your due diligence to pick an ASP likely to stay afloat.

"Go into it with your eyes open. Evaluate the worst-case scenario. Come up with contingency plans and always monitor your applications," says Rodric O'Connor, vice president of technology at Putnam Lovell Securities in San Francisco.

O'Connor carefully checked the financials of the ASPs he considered, ensured that critical data he needed was synchronized daily into an internal database in case the vendor went out of business, set up redundant network connections between his four offices to offset any infrastructure problems and used VPNs and Secure Sockets Layer-encrypted Internet connections to access his applications. He uses AppShop for Oracle Financials, Salesforce.com for customer relationship management, BlueMatrix for research management and Jamcracker for human resources software from Employease, access control from iPass, and online collaboration tools from WebEx.

"The core financial arguments [for using ASPs] outweigh the fear," O'Connor says.

Technical difficulties

You can't blame potential ASP users for being cautious. In addition to some shaky business models, ASPs were facing difficult technical hurdles. "There were last-mile concerns, concerns about security over the Internet, transaction volumes over the Internet, things like middleware to write and maintain interfaces," says Rob Unger, CEO of Agilera. "It's not as easy as people might have thought it was going to be. But that's actually where the value to clients comes in, because in effect they'd have to manage all of that internally if they were going to do it themselves."

So while early ASPs targeted dot-coms and small businesses that required little integration and customization, and accessed their applications largely via the Internet, maturing vendors struggled with how to provide the same service to more demanding large corporations.

Corporations were worried about security, connectivity and integration, observers say. One thing that troubled them was delivery over the public network, says Mark Hoffman, application systems architect at Tufts Health Plan and a member of the ASP Industry Consortium's End User Council.

"There's the question of latency involved with the Internet cloud, because it's really kind of a black hole when it comes down to it. Even with a VPN, you can have a disruption of service; your service provider's router could fail," Hoffman says.

Even today, most large corporations connect to their ASPs, at least for data transfer, via private lines. For example, National Semiconductor is located close enough to a QCS data center that it accesses its SAP application via a T-3, "which is a 45-megabit connection that puts them right on the LAN," says Klaus Preussner, director of infrastructure for the chipmaker.

The proliferation of less-expensive bandwidth helped launch the ASP market because vendors could offer the pipes needed to deliver bandwidth-heavy enterprise applications such as PeopleSoft and SAP with high levels of performance. The proliferation of metropolitan area Ethernet will only increase the quality of application delivery.

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But bandwidth at a lower cost does nothing to help ASPs deal with the complexity of delivering applications designed for a client-server environment, another technical obstacle ASPs encountered.

"They were forcing a square peg in a round hole," says Summit Strategies' McCabe. "If you have applications that were designed to be put on a server by a company, used by one company, used with a Windows interface, let's say, the things you have to do to make that work as a Web-delivered service to many customers is pretty mind-boggling."

What's more, big companies didn't want the "vanilla" applications ASPs were set to offer, preferring customized software that could be integrated with their internal systems. While ASPs offer some degree of customization — QCS, for example, has prepackaged, industry-specific software suites — few are willing to spend the time and money it takes to offer high levels of customization. One exception is Corio, which now hosts Hitachi America's highly customized SAP R/3 software.

Another approach to customization is to choose an ASP that focuses on a vertical market. Larry Hancock, CEO of Altius, a health maintenance organization in Utah, was faced with upgrading his online claims and benefits software from Quality Care Solutions. He also had to meet stringent security guidelines set by the Health Insurance Portability and Accountability Act — all with an IT staff of 12.

By turning to healthcare, industry-focused ASP Trizetto, Hancock says he can continue to run applications customized to his needs and provide high-quality service to his 115,000 members, without worrying about internal IT.

"Somebody like us, we just can't keep up on it," he says. "When you have somebody like Trizetto that has the resources and is big enough to keep up on it, then there is a lot more value there than just some somebody hosting the application for you."

Delivering the data

Assembling the infrastructure necessary to deliver hosted applications isn't inexpensive. Most ASPs have found it difficult to establish the customer base and recurring revenue they need to offset debt.

Market research firm IDC released a return-on-investment study earlier this month showing that ASP usage provides a more than 400% return on investment over five years. Analyst Amy Mizoras says, "One of the things we're investigating is are the customers getting a [return on investment] at the expense of the ASP's own [return on investment]?"

Take USinternetworking, for example. One of the first ASPs when it launched in 1998, USi decided it needed to build its own data centers to offer the complete service it figured larger companies would demand. USi invested millions of dollars in its buildout, but customers were slow in coming.

USi instituted layoffs and decided not to build out any more data centers. Earlier this month, Bain Capital promised the ASP a $100 million equity investment that should carry USi to profitability. Still, USi executives say their decision to build their own data centers was the right one.

"Some people have suggested that you can provision an NT or Windows 2000 box, or a Unix box, with an Oracle database or a SQL database. Stick a router in front of it with a firewall behind it, build some bricks and some concrete and stick a cage in there, and you have all you really need to be an ASP in terms of the application stack," says Matt Howard, USi vice president of business development. "That's not true at all."

What's needed is tight integration between the application and all layers of the infrastructure — from servers, to network operating systems, to databases, to networks, he says. "It all starts with service. And to be in the service business you need to understand the total stack."

Infrastructure is something network executives need to take into account when considering ASPs. If your internal network isn't suitable for handling ASP-delivered applications, you may face big headaches such as systems integration and the need to install client software on each desktop.

"You need to make [the ASP] a strategic initiative," says National Semiconductor's Seif. "You've also got to have the right infrastructure behind it."

National uses a portal to deliver all of the applications accessed by its employees, customers and partners, eliminating the need to install clients on individual computers. That made moving to QCS easy. "When we moved to the ASP we only had to change one IP address," Seif says.

Software as a service

Vendors such as Microsoft, Sun and IBM are developing Web services that will let applications communicate with each other using XML-based languages. And PeopleSoft 8 and Siebel 7, for example, are designed to be delivered online.

What does this mean for pureplay ASPs? They'll have to find the niche where they can not only deliver applications but also add value, observers say. Those that don't are ripe for acquisition by telecom companies or large consultancies with the deep pockets to fund the top heavy business model.

"When we look, say, five years from now, the early ASPs will probably look as different from the software as service providers as Cro-Magnon did from humans," says Summit's McCabe. "It's got to change and adapt before it reaches its ideal state."

One thing analysts expect are more so-called Internet business service providers, such as Salesforce.com, Upshot, Portera and Blue Matrix, which write their own Web native applications to be delivered via the Internet on a monthly subscription basis.

There is no question the ASP market will thrive, observers say. But you probably won't know the players as ASPs. Software as a service, it seems, is what we'll call the next big thing.

"The word ASP will have to be retired. It's too damaged a name. To relaunch the word ASP, would be tantamount to relaunching ValuJet," says Tom DePasquale, CEO of Outtask, a firm that hosts business applications such as human resource management, CRM and sales force automation. "Software as a service is the entire model of the Microsoft .Net effort. It's very much the focus of Oracle. It's the focus of the leading software companies of the world. It's easy to argue the days of shipping CDs are over." ■

Gone but not forgotten

Many ASPs lacked the business plans or financial backing to survive in the market. Here are some of the best-known failures:

Agillion: CRM. Launched 1998; closed March 2001.

Breakaway Solutions: E-business applications, creative professional services, Web integration. Launched 1992; filed for Chapter 11 in September 2001.

FutureLink: ERP and CRM. Launched 1995; filed for Chapter 11 in August 2001.

HotOffice.com: Calendaring, collaboration, office services. Launched 1995; closed December 2000; assets acquired by Thruport Technologies in September 2001.

Pandesic: E-commerce. Launched 1997; closed July 2000 and finally stopped serving customers in February 2001.

Red Gorilla: Time and expense-tracking, calendaring. Launched 1999; closed Oct. 2000.

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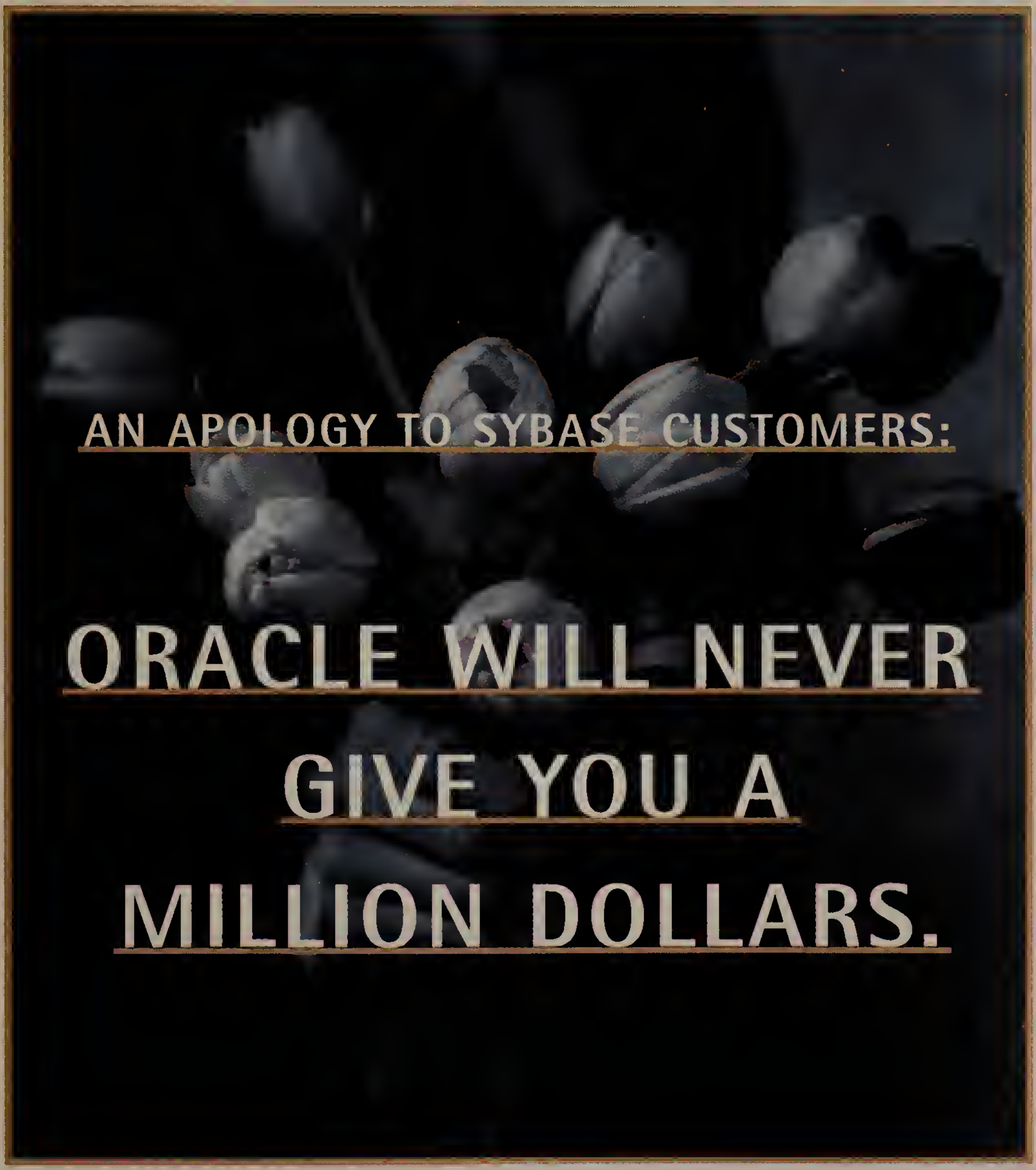
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ABCs of Videoconferencing

Pick the right client device, figure out LAN bandwidth requirements, nail down WAN links, then start conferencing.

BY CHRISTINE PEREY,
NETWORK WORLD
GLOBAL TEST ALLIANCE

If your company's travel budget has been slashed or if the recent terrorist attacks have made employees reluctant to fly, you may be considering videoconferencing as an alternative to face-to-face meetings.

Before you jump in, here's a comprehensive guide to enterprise-level videoconferencing that covers everything from bandwidth requirements to equipment options to deployment costs.

Client devices

Currently there are three distinct categories of clients defined primarily by usage.

- Desktop: Desktop videoconferencing clients are assigned to a single user. They cost between $600 and $3,000 for a hardware-based system and up to $150 for a software-only client. Connectivity is over IP.
- Small group: Either an appliance that costs between $3,000 and $12,000 or a PC-based system that costs between $6,000 and $14,000. Small-group videoconferencing systems are relatively easy to configure and use. They run over ISDN or IP.
- Large group/boardroom: Provide the highest-quality video, but also come with the highest price tag, with systems starting at $10,000. They also run over ISDN or IP.

LAN speeds

Videoconferencing can leverage the existing public telephone network, a private IP network or the Internet. The target bandwidth for interactive video communications is in the 300K to 400K bit/sec per stream range. This includes audio and video as well as control signaling.

The H.323 protocol does not require that two or more endpoints in a session send the same data rate they receive. A low-powered endpoint may only be able to encode at a rate of 100K bit/sec, but, because decoding is less processor-intensive, it could decode a 300K bit/sec videostream.

Nevertheless, in videoconferencing, bandwidth is

Three types of client devices

Category	Desktop		Small group		Board/large group
Subcategory	Hardware accelerated	Software only	Appliance	PC-based	
Network connectivity	IP	IP	IP or ISDN	IP or ISDN	IP or ISDN
Costs	$600-$3,000	Free to $150	$3,000-$12,000	$6,000-$14,000	$10,000 and up
Manufacturer	Polycom, Vcon, Tandberg	FVC, Microsoft, EYEball, FocusFocus, RealityFusion	Polycom, Tandberg, Vcon, Sony	Polycom, Vcon	Polycom, Vcon, Sony, FVC
Pros	Personal system assigned to one user; well-integrated with data conferencing applications.	Same benefits as hardware single-user device, but less expensive than hardware.	Easiest to configure and use; shared resource in meeting room; can be effective for presentations; frequently includes built-in MCU.	Maximum strength data-collaboration environment; flexible for other uses when not in videoconference.	Quality closest to "being there" experience.
Cons	Viewing area may be limited; minimal control of environmental conditions (especially lighting); individual support may be costly; does not exceed 512K bit/sec data rate.	Same as for hardware only; lowest audio and video quality (data rate a function of PC).	Limitations to data conferencing; isn't used for anything else when not in videoconference.	Easily tampered with; potentially difficult to set up; slightly higher cost for presentation functionality.	Highest cost; low flexibility.

assumed to be symmetrical. In full-duplex networks such as ISDN, Ethernet, ATM and time division multiplexed networks, capacity is expressed as bandwidth in one direction, though equal bandwidth is available for traffic in the opposite direction.

Table 2: Bandwidth requirements

Base stream	384K bit/sec	512K bit/sec	1M bit/sec
One, two-party session	384K bit/sec	512K bit/sec	1M bit/sec
Two, two-party sessions	768K bit/sec	1024K bit/sec	2M bit/sec
Three, two-party sessions	1152K bit/sec	1536K bit/sec	3M bit/sec
Four, two-party sessions	1546K bit/sec	2048K bit/sec	4M bit/sec

You need to estimate the number of simultaneous sessions your network needs to support, and figure out if your network has bandwidth end-to-end.

A T-1 offers 1.5M bit/sec in each direction and would be ample bandwidth for two 512K bit/sec or three 384K bit/sec videoconferences, depending on the amount of simultaneous traffic on the network. Also, make sure that you have 10/100 switched Ethernet throughout the LAN segments where videoconferencing traffic is expected.

Multipoint conference bandwidth (with which three or more locations can see and hear one another) is calculated separately from point-to-point sessions. Multipoint can be conducted in either IP or ISDN environments, and some conferencing units will support both network types.

Multipoint conferencing products may be software-based or accelerated with special hardware, and their configuration can produce different bandwidth consumption patterns as well as different user experiences. For example, when an endpoint is used to host a multipoint conference, the maximum bandwidth for any single participant is the bandwidth allocated to that host divided by the number of locations participating. When you need to have more than four locations on a call at the same time, network-based products are recommended.

If you decide that your IP network can't handle the additional traffic associated with live video sessions in a merged or converged network deployment, your options are to rely on circuit switched networks or to deploy additional IP bandwidth capacity.

The WAN connection

Approximately 80% of the group videoconferencing units installed today interface directly with ISDN. Less than 5% use ATM, and the remainder are on an IP net.

ISDN is recommended when:

- You are planning to connect with people in locations outside your company.
- The locations are in Europe, where ISDN is easily available and broadband IP remains at least 50% more expensive than in the U.S.
- Your IP network capacity is lacking and you do not expect to place outbound calls more than two or three hours per month.

If you use ISDN for transport and you want to add centralized user administration or system management, you can still install an Ethernet connection to each device and a management software package such as Polycom's Global Management System or Vcon's MXM on a server in the company's data center.

The limitations of ISDN (Basic Rate Interface or Primary Rate Interface) include:

- Availability not widespread in the U.S.
- Difficulty configuring and managing once ordered.
- Subject to service interruptions (single point of failure).
- It has distance-driven and metered costs (long-distance).
- The infrastructure supports only one telephony-like service: multipoint conferencing.

Video calls on ISDN cannot be put on hold, cannot be forwarded (when no one answers, when the line is in use or for any other reason), and there has never been a "video mail box" on ISDN. Recording one side of an ISDN videoconference is possible using an analog VCR provided the appropriate interfaces exist on the local client system.

The IP option

Using proprietary technologies or H.323 standard-compliant endpoints, an IP network designed only for data can be modified to support business-quality videoconferencing services.

Where bandwidth is available, the IT manager would need to add and adjust a few components to provide a complete solution, or outsource the management to a third party such as WireOne's GlowPoint service or Sprint's IP videoconferencing services.

If the deployment is expected to have more than five or six systems, a centralized user and network administration console such as Polycom's Global Management System, RADVision's H.323 gatekeeper or Vcon's MXM is recommended.

Some companies are going a step further and designing an enterprise conferencing portal using technologies such as FVC's Click-to-Meet. While these packages differ in their features and functions, they are designed to perform address book management (an important issue when clients are set up behind a firewall and use network address translation), set performance metrics on a per-device or user basis, and can even reduce the risk of application data traffic degradation due to excessive bandwidth consumption.

Network components for videoconferencing

Category	Stand-alone multipoint conferencing unit		Gateways		Management software		
Subcategory	Hardware accelerated	Software only			IP PBX	Gatekeeper	User/network
Network connectivity	IP or ISDN	IP	IP to ISDN	IP to ATM	IP or ISDN	IP	IP or ISDN
Costs	$500-$800	Free to $150	$3,000 and up	$6,000 and up			
Manufacturer	Polycom, Avaya, RADVision	FVC, Vcon, Ezenia	RADVision, Polycom	FVC	Cisco, Vcon	RADVision, FVC, Vcon	Polycom, Forgent

QoS questions

Implementing quality of service (QoS) in a LAN helps to protect the integrity of service-sensitive applications without forklift upgrades. Most of the leading network equipment vendors already support common QoS standards, such as RSVP; they only need to be enabled by the network administrator.

You should also find out what your backbone provider uses for its QoS. If the protocol or scheme chosen for QoS in the local loop is not the same as that implemented in the backbone, the enterprise network needs to put QoS translation software in place for QoS requests to operate end-to-end during a videoconference.

Even when QoS protocols are in place, you may need additional network tuning to ensure that the video applications don't crowd out data applications. To avoid this, network managers should segment and manage bandwidth on each switch and router to limit the total, prioritized video traffic.

After provisioning appropriate bandwidth and QoS, other challenges remain. One of the biggest obstacles is getting real-time video traffic through firewalls. Since H.323-compliant applications use dynamically allocated sockets for audio, video and data channels, a firewall must be able to allow H.323 traffic through on an intelligent basis. The firewall must be either H.323-enabled with an H.323 proxy, or able to "snoop" on the control channel to determine which dynamic sockets are in use for H.323 sessions, and to allow traffic through only as long as the control channel is active.

Merging and emerging services

Since the very essence of videoconferencing is communications and most legacy systems are not on IP networks, the user is likely to encounter a situation where protocols need translation across different networks. When a videoconference needs to span both the ISDN and IP infrastructures, gateways are necessary.

RADVision is the leading manufacturer of videoconferencing gateways and offers a variety of form factors and densities to meet diverse network requirements.

Some companies have to share limited resources and want a reservation system to permit room or multipoint control unit (MCU) scheduling.

Endpoint and MCU vendors offer some scheduling tools that may meet your company's needs. Third-party products, such as Collaborative Systems' Orchestra, MagicSoft's VC Wizard and Global Scheduling Solutions' Global Schedule, have unique features.

When the videoconferencing basics are in place for group conferencing, you might consider a number of optimizations. For example, by enabling IP multicast and using intelligent clients, a network can efficiently support multiway meetings without adding an MCU.

If using IP multicasting to achieve a multipoint scenario, each client sends only one stream of packets to an IP multicast group and all participating machines receive the packets. In this scenario, bandwidth consumption is lower than when an endpoint or MCU sends out copies of the same packet to each of the receivers.

Another second-generation feature found in products such as Polycom's ViewStation FX is integration of videoconferencing with streaming media systems, enabling the broadcast of a videoconference from a coder/decoder to many remote viewers via a streaming media server or to archive a videoconference on a streaming media server for later review.

Although an exception to the rule today, large financial services companies that have integrated videoconferencing into their corporate cultures are beginning to deploy desktop videoconferencing capabilities. With Universal Serial Bus interfaces, setting up a videocamera takes only a few minutes, in contrast with earlier desktop products that required opening the PC and installing a card. Low-cost Webcams put all the computational load from compressing video and audio on the host computer. Optional hardware-accelerated cameras designed specifically for videoconferencing, such as the Polycom ViaVideo or Vcon Vigo, produce the best results.

Approximately 80% of the group videoconferencing units installed today interface directly with ISDN.

How much does it cost?

Depending on the number of endpoints, the type of client and choice of networks, videoconferencing can cost as little as the price of a Webcam ($100) per seat to more than $15,000 per conference room.

To budget a videoconferencing deployment, break down the fixed acquisition costs from the recurring and usage-based costs. The exact fixed costs are going to depend on the number of systems and the features your users need. In general, systems provisioned for ISDN will also support IP, but IP-only systems tend to cost several hundred dollars to $1,000 less than ISDN systems because they have fewer components. Management software is sold according to site licenses from $250 per license to $40,000 or more for unlimited licenses. Complete enterprise conferencing portal environments suitable for large companies can exceed $100,000 per installation, depending on hardware and software components.

Another factor is the cost of installing the last mile. Basic Rate ISDN installation runs about $225 in most regions of the SBC territory, while other regions tend to be higher. The cost of installing a T-1 depends on the distance between your facility and the nearest central office.

Recurring costs are composed of the monthly cost of network access, network usage costs and, potentially, the salary for one or more technicians managing network provisioning, installations, room or conferencing system reservations, technical support and user training. The largest variable in this equation is the network usage costs.

ISDN usage charges vary but can be estimated for individual customers (one site) at 5 cents per minute per B channel. A 384K bit/sec videoconference will consume 6 B channels at a cost of approximately 30 cents per minute, or $18 per hour. Companies that negotiate their telecommunications rates with carriers for voice and video usually receive discounts on this rate.

ISPs also charge for capacity, though not by the minute. To calculate the costs of IP backbone services, multiply the data rate by the time. A 384K bit/sec call for one hour will generate nearly 1.4G bits of bandwidth. On a VPN the network usage costs are already fixed and the company will incur no additional charges.

Going with a managed service provider can be cost-effective for some regions and some companies. GlowPoint's Web site offers a calculator, and users can plug in the number of hours of usage per location and the average cost of ISDN service to obtain a cost estimate.

The costs of deploying videoconferencing are as variable as the networks and depend on the number of installations, features and choice of network. Cost of ownership runs about $15 per hour for a midsize enterprise. It's safe to predict that costs will continue to fall as more people get on the bandwagon. And, in the face of rising travel costs, getting a rapid return on your investment in videoconferencing is easier now than ever before.

Perey is president of Perey Research and Consulting in Placerville, Calif. She can be reached at cperey@perey.com.

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Windows XP

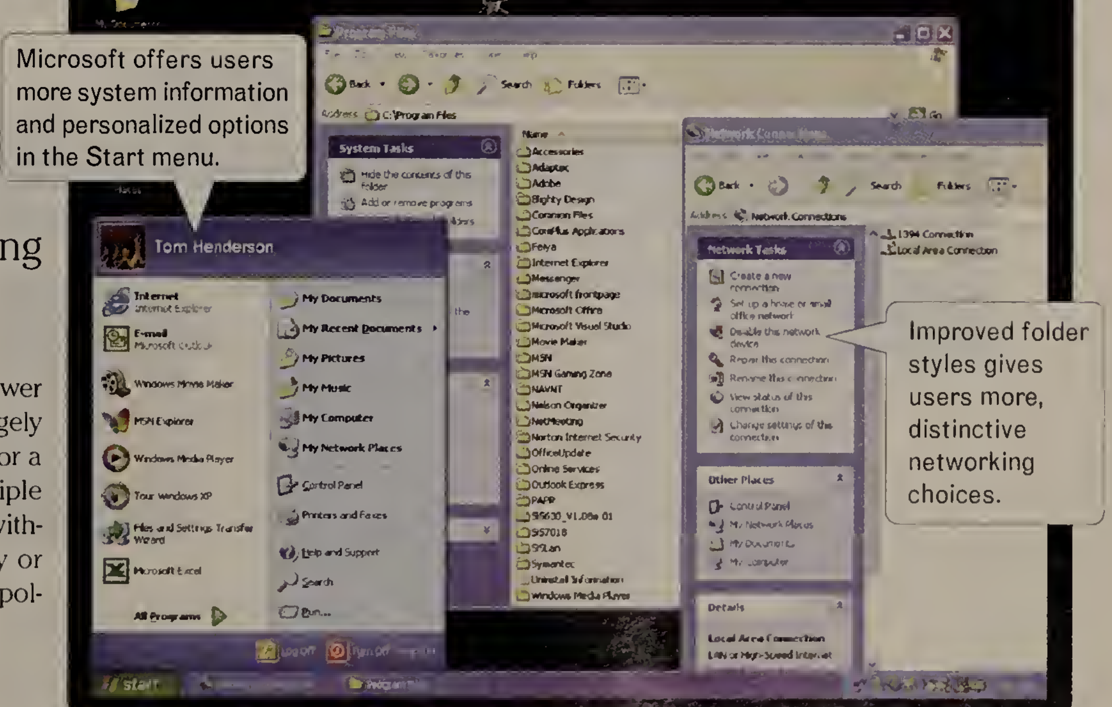
New desktop operating system gets high marks for reliability, a new interface and improved multimedia features, but changes in the networking stack raise security issues.

BY TOM HENDERSON, NETWORK WORLD GLOBAL TEST ALLIANCE

Windows XP, the long-awaited merger of Windows versions based on DOS and those grounded in NT, was released last week in New York. Our testing showed there are many implications to consider before deploying XP wholesale on your corporate network, including new and enhanced distribution methods, changes to the networking stack and potential privacy issues.

Windows XP's pretty new face

The Windows XP interface lets users move quickly from program to program, but begs for larger display area.



Microsoft offers users more system information and personalized options in the Start menu.

Improved folder styles gives users more, distinctive networking choices.

Overall, XP is a relatively reliable operating system, has an overhauled user interface and includes multimedia enhancements.

XP comes in two editions, Home and Professional. Server versions of XP will likely be released in the second quarter of 2002. The Home Edition lacks enterprise functionality including tiered authentication services, IP Security (IPSec) VPN support, endemic file/folder encryption support and back-up software. Microsoft has imposed limitations on usability of the Home Edition in business networks, but has paid attention to building residential networks from XP and connecting those networks via XP Home Edition to the Internet.

The strongest enhancement to the XP Professional Edition is the delivery on promises Microsoft made for Windows 2000. Group policy administration (via the Win 2000 Active Directory) components are easier to define and manage. There are more than 200 more policies for desktop lockdown, defining users and security setup than in Win 2000. The new Resultant Set of Policy utility gives you on-the-spot policy configuration information about any PC or logged-on user and can help you to debug policies for that PC.

User mobility functions are improved. IntelliMirror functions, which let users easily take their PC desktop and folder settings to other computers, have been improved. Users can place files from a local, network or Internet files/data source into portable cache, making the data on remote machines available to authenticated users.

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- Bundling issues and privacy concerns raised by consumer advocacy groups.

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Additionally, hardware power management has been largely perfected, and the ability for a single PC to support multiple users has been upgraded without sacrificing user privacy or security for group-applied policy characteristics.

Getting to XP

From an installation perspective, XP is what Win 2000 should have been. There are many flexible installation choices and distribution options, far better attention to existing applications compatibility and far less software driver chasing than was necessary with Win 2000. We had trouble finding hardware that didn't work with XP upgrades from Windows 98 or Win 2000. It also has the first compelling user interface changes in six years — XP is actually pretty.

The biggest frustration we found with XP is the lack of Java support in its browser. It's an immediate show-stopper because familiar Java apps — from simple games to sophisticated SNMP monitoring programs — simply don't run at all. Fortunately, a Sun-sponsored interim Java Virtual Machine can be found on the Web (www.nwfusion.com, DocFinder: 6623).

Registration is now a part of installation, and there's little choice but registering the license of an XP installation because it soon expires. On the downside, XP versions won't load if the license is moved or migrated to another PC. This potentially places a burden to purchase additional licenses for XP support in large installations to overcome hardware disasters.

However, in our tests we were able to change a significant amount of hardware in a PC before XP wouldn't load. We don't know the exact formula that stops XP from thinking it's been moved, but we found that motherboard changeouts or significant upgrades (especially CPU changes) are likely to trigger XP licensing expiration notifications. We also found the Automated System Recovery feature included in the bundle has no implications on licensing unless aforementioned hardware features were dramatically changed.

The Networking News

XP Professional hardware and network detection has advanced significantly, and it does a better job than previous versions in detecting its network environment and subsequently making correct installation settings. Wizards invoked by XP during upgrades and fresh installations complete quickly and accurately, with often with little or no user intervention.

XP doesn't present any dramatically new or different reactions in the International Standards Organization/Open Systems Interconnection Layers 1 through 4 over Win 2000 — with important exceptions noted below. Unlike its predecessor, XP allows applications nonroot, raw TCP/IP sockets access. This unprecedented access lets applications tap into the Winsock API (which controls network communications among other tasks) without control of the operating system kernel.

The good news is that streaming media and TCP/IP communications such as browser, mail and/or multimedia traffic no longer necessarily transverse kernel address space, and the kernel might become more stable as fewer demands will be placed upon it. Timing-sensitive, sophisticated multimedia applications may have a smoothness and performance improvement as another result. The smoothness effect is more pronounced in older and/or slower PCs.

The downside is that nonroot raw sockets access also means that XP workstations, once infected with aggressive or hostile code in the form of viruses, Trojans, zombies, etc., could wreak havoc on network segments, as applications can gain control of the Winsock API stack autonomously and unauthenticated. In some cases, that's possible in current Windows versions but it's more difficult natively as raw socket capability can be installed through third- party tool kits — potentially letting hostile code to gain control.

Most networked PCs haven't used nonroot raw sockets before because they haven't needed them. Microsoft apparently felt that improved performance was needed over the potential for harmful interaction with hostile code.

There are no currently known attacks that can take advantage of this feature, and future security updates may prevent difficulties. But it places a certain burden on network professionals overseeing XP deployments to have integral firewall protections in place. Microsoft includes one, called the Internet Connection Firewall, which can be used on LANs, VPNs or dial-up connections to remote access servers or ISPs. However, we noted that Internet Connection Firewall affected Ethernet performance in some cases. We noticed this effect on machines that meet the minimum CPU speed requirement (300 MHz). XP Professional and Home Editions required a SirCam Virus patch, but otherwise survived our Internet Security Systems RealSecure Scanner testing of the firewall and other port probes. The firewall includes network address translation that didn't render the IPSec VPN protocol unusable as other personal firewall products can.

XP also supports Session Initiation Protocol, an enabler for IP telephony and directory-based messaging services, and includes a peer-chat feature called Windows Messenger that some organizations will support and others will take pains to block because of its potential abuse and/or misuse. Our tests proved it isn't tough to disable on individual machines or to extract from corporate upgrade distributions.

Organizations wanting the comparative reliability of Win 2000 will find that the wait for XP has likely been well worth it. However, before you deploy it, consider the sensitivity points of privacy, applications life cycle and compatibility, and the potential danger from raw access to the TCP/IP sockets. A final consideration is that getting too far behind the current Windows revision demands an ever- enlarging upgrade price-tag tax from Microsoft, as Microsoft has changed XP pricing so that it is more expensive to move to XP from Windows NT or 98 than from Win 2000.

Henderson is principal researcher for ExtremeLabs of Indianapolis. He can be reached at thenderson@compuserve.com.

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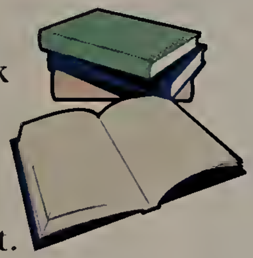

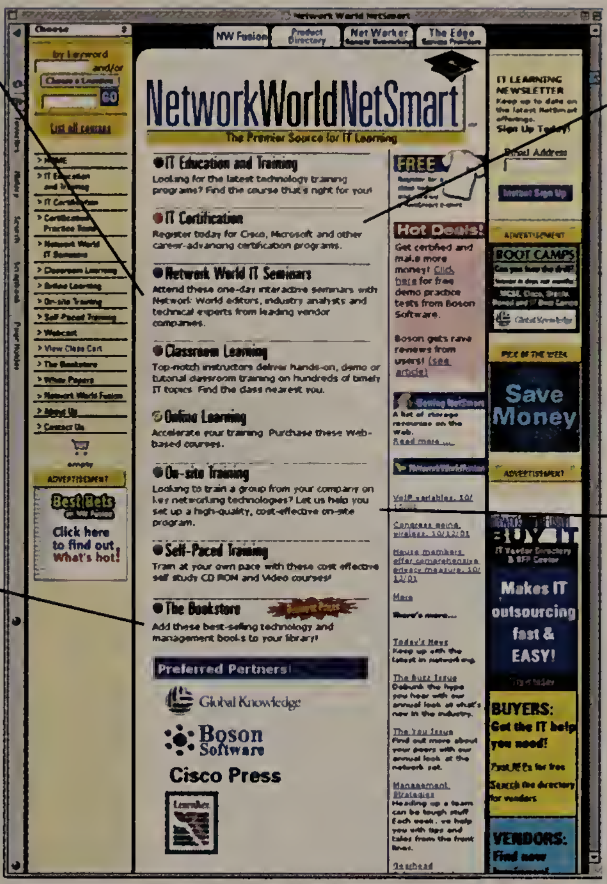

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TESTER'S CHOICE
Tom Henderson

The democracy of really standard standards

If all standards were really standard, we'd be able to take product specifications, drag-and-drop them into our simulators and get a working model of how they function. We'd simply download the latest class object with the characteristics of the new product, drop it into our working network models and click the go button.

A full simulation would take place. Updates would automatically occur to the asset-management lists; to the security, safety and building-code compliance sheets; to the organizational policy-management programs; to the scheduling applications and the investment analyzers; to the help-desk profiles; the off-site, record-management/hotsite/redundancy agencies; and probably even to the Internal Revenue Service.

We'd be able to predict with unerring accuracy how our networks would respond to outages or to the injection of loads such as Napster or Video on Demand, conversations over IP or hostile applications. We might even be able to do the impossible: change two or more variables at once without the need for normalizing iterative results. Perhaps, product reviewers and researchers like me would be out of a job.

No, we're not there yet, but we are slowly getting closer. The key has been the evolution of industry standards. The International Standards Organization developed its famous Open Systems Interconnection reference model in the mid-1980s because nothing connected to anything in computing, except for some obscure protocols that would later become the crux of the Internet. These days, standards are one of the basic (and often overlooked) reasons why we buy products — standards set an expectation. And standards bodies need help.

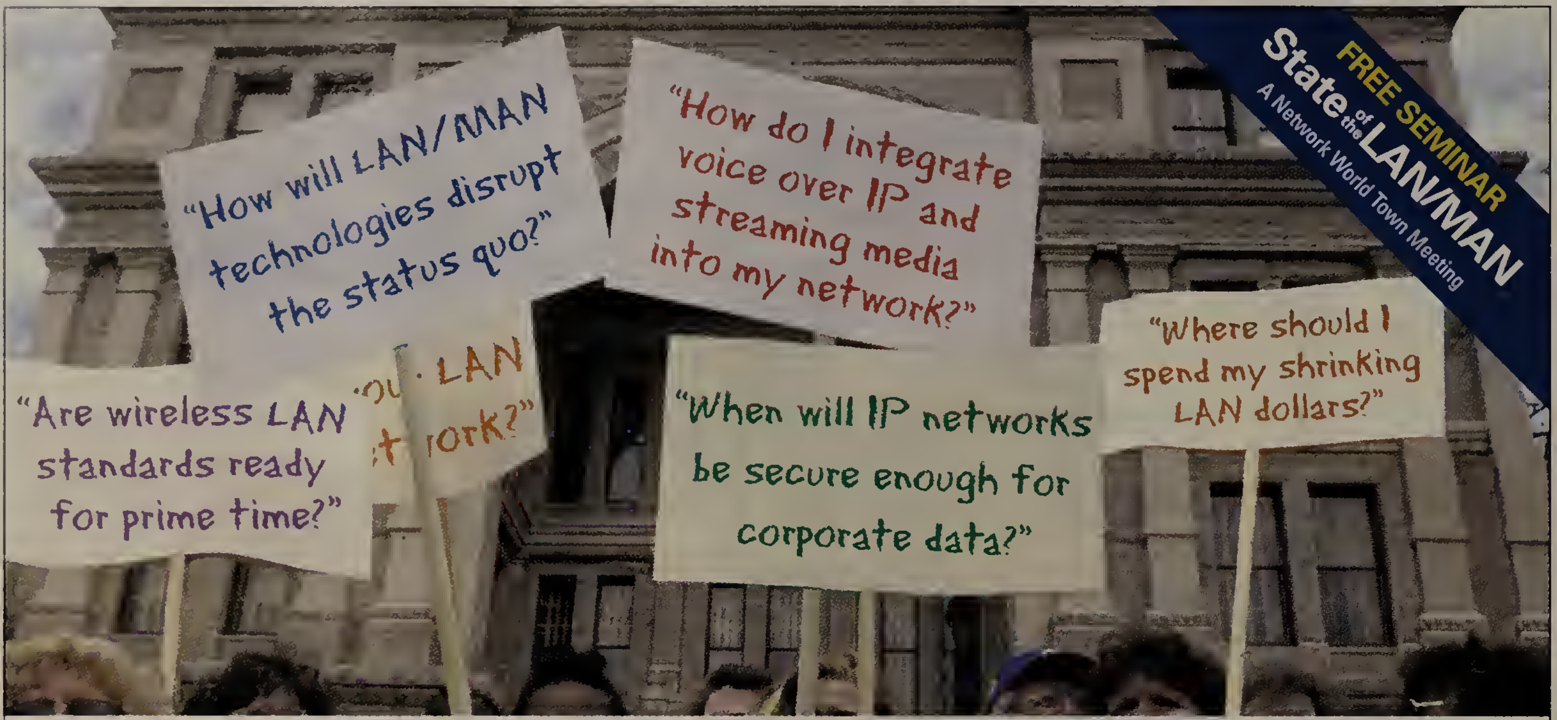
The standards process is largely vendor-driven today, with engineers from network companies leading working groups within the IEEE, the Internet Engineering Task Force, the World Wide Web Consortium and the like. Sometimes these bodies are connected; other times they are not as tied into each other as they could be.

On good days, because of standards, you can connect a fiber-based ATM-over-SONET line to a router/switch at OC-12, and it comes out the other side of a router as blissful Ethernet. On bad days, you can listen to cable-testing product companies growl that Ethernet and ATM are standards, but that testing them over unshielded twisted-pair cabling can be all but ambiguous.

Some network product vendors say, "We love standards; we bought and paid for them." In a way, that's true, as vendors have the money and competitive onus needed to fly personnel to meetings, conduct research and get together to find methodologies to permit interoperability. User communities don't have those funds.

Standards enforcement is another matter. I want a way for users of network technology to become more involved in the standards process without some of the incumbent expense. Then perhaps I can get the other perfect world: standards bodies whose standards are required to link judiciously with other standard bodies', as a standard. As industrial interoperability was once an oxymoron, interdisciplinary standards could become another one.

Henderson, a former communications engineering executive, is principal researcher for ExtremeLabs in Indianapolis. He can be reached at thenderson@compuserve.com.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Keep encounters to 3 to 5 minutes. Schedule a separate meeting for problem-solving.

Wear a company shirt and name badge on your right shoulder to increase visibility; dress up vs. down.

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Hold your drink in your left hand for a dry handshake; women extend hands first.

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JEFF SHELLY

■ BY SUZANNE GASPAR

Soon after Scott Ladewig rolled out Windows 2000 and Active Directory at Washington University, he became the big man on campus. Ladewig, manager of networking and operations for Washington University's School of Business, was in high demand among his peers for implementation advice.

"Department managers were calling, saying, 'Hey, you've done this, what do I need to watch out for?' Getting known for a particular expertise lets you make yourself a resource," says Ladewig from the school's St. Louis campus.

Ladewig, too, benefits from talking shop with colleagues in the IT industry. In January he polled attendees at a Dell seminar for insight into supporting the vendor's laptops. He decided to forward any problem with students' laptops to the vendor if the university's IT pros couldn't solve it within 15 minutes.

Far more than simply providing social interaction, business networking helps you build reciprocal relationships for sharing knowledge and skills. Professional conferences, trade association meetings, cocktail receptions and classes provide many chances to strike up conversations and establish professional contacts. But to make the most of potential networking opportunities, IT executives say it's best to have a plan.

Bruce Lummis, vice president of telecommunications for home shopping giant QVC in West Chester, Pa., forms an agenda for picking the brains of others at annual conferences. "The first thing I do is pull out the attendee list to see who's there, [and find] particular issues I've heard of or a company doing something interesting," he says.

Ladewig scans the name tag table when he arrives at an event and prefers small industry venues for getting to know folks well over the course of two days. "In between sessions, we're all just waiting," he says. "It's easy to talk when you have something in common and are following the same track."

Technical classes are good places to hear about how others are using technology. "They may be doing something we may want to try or see," says George Lewis, MIS director for Rural Health Services Consortium in Rogersville, Tenn.

What's more, some of the best networking encounters take place at the podium, according to Jerry Connelly, IT director for Galaxy Scientific in Egg Harbor Township, N.J. "It's good just to hang around the back of a group at the podium after sessions. They may have the same problem that I'm dealing with and maybe we have something to share," Connelly advises.

"Watch for people who ask the presenter questions. IT folks are problem solvers," says John Bruggemam, IS director at Hebrew Union College in Cincinnati. "You definitely learn more from the bad than the good, and sharing misery is an easy way to break down the communication barrier."

When Hal Adams attends an event, the IS director for National Semiconductor in Portland, Maine, seeks out the people who appear most interested in the topic. This tactic paid off at a vendor seminar when a fellow attendee gave him "an enormous amount of information I wouldn't get otherwise. I always want to hook up with someone who's been in the trenches," he says.

Wherever you go to forge new business relationships, follow up is key. Jot notes on the back of business cards, scan cards into a database back at the office or enter contact information in your PDA. Write, call or e-mail contacts within 24 hours of your initial meeting if possible to share resources or schedule a follow-up discussion.

"If there's a common interest, there will be some form of follow-up communication," Adams says. "I have called someone even after a two-year lapse."

Ray Theberge, vice president of IS for Office Resources in Boston, likes the ease of using e-mail to keep in touch with colleagues. "After 5 o'clock, when I'm sorting papers I find moments to get back to people by sending an article on a topic we've discussed," he says. ■

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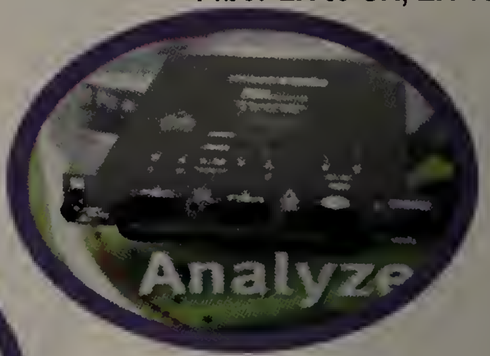

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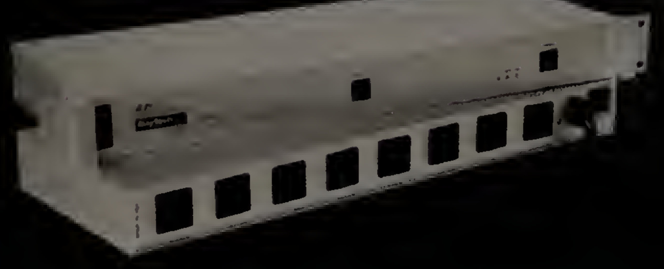

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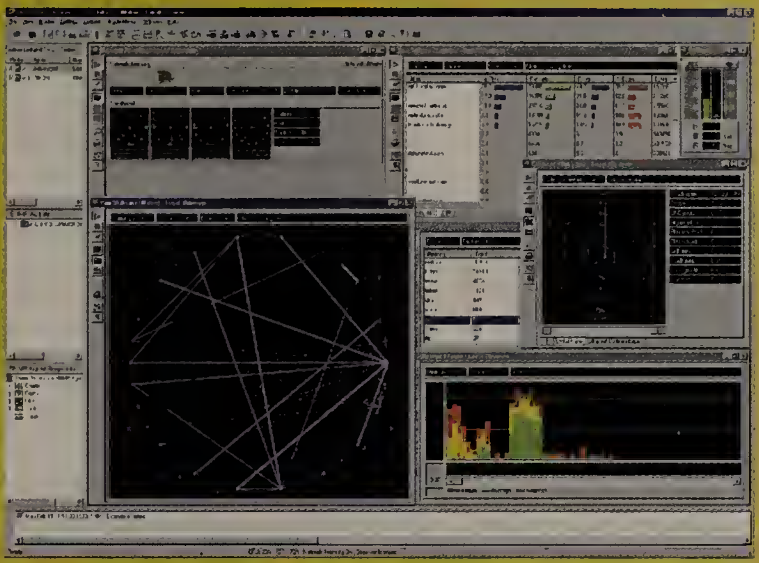

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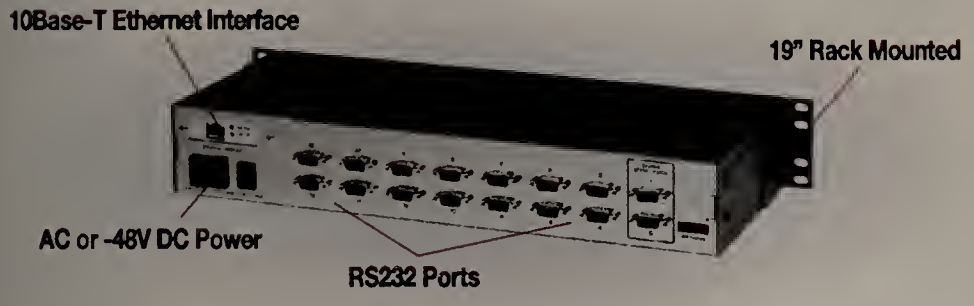

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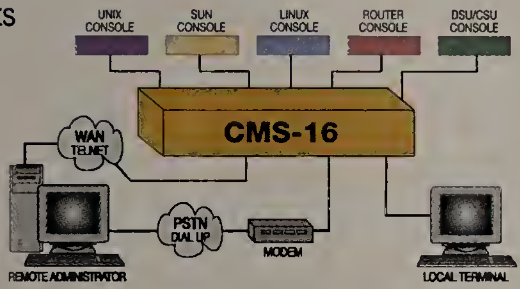

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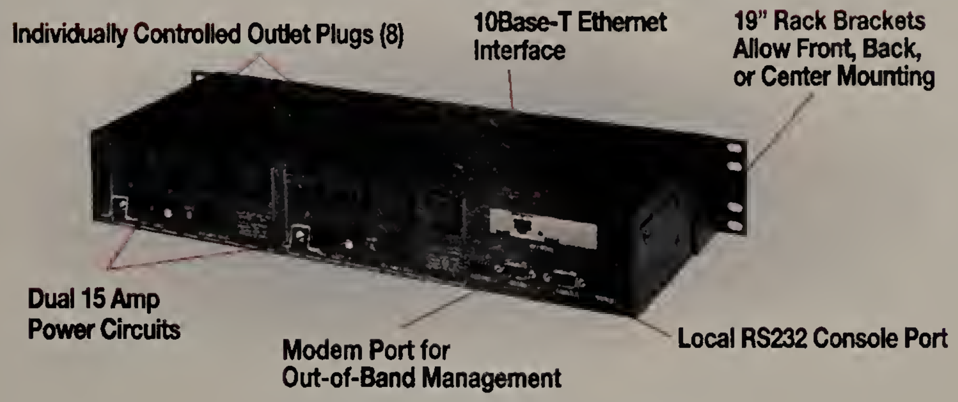
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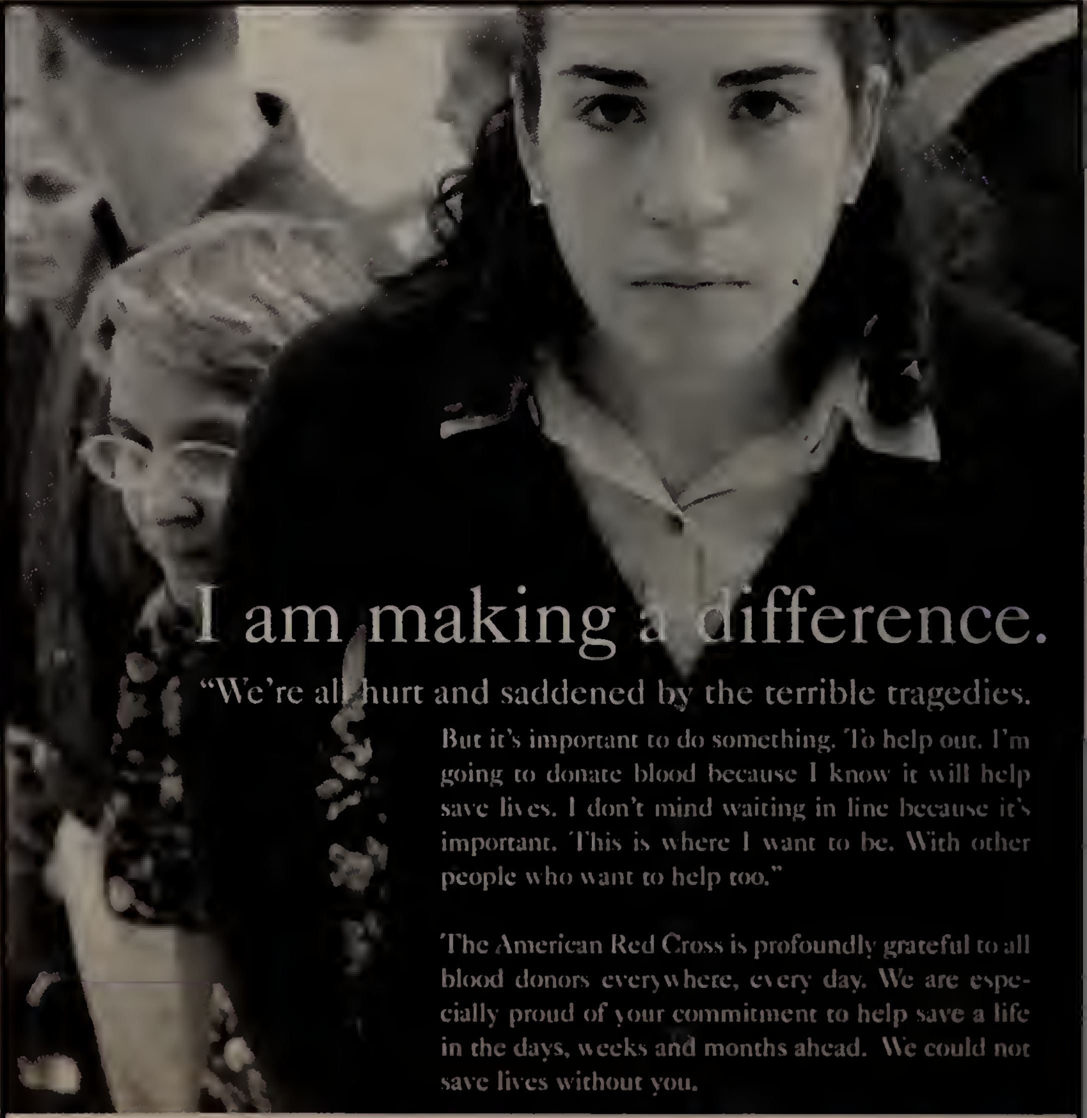

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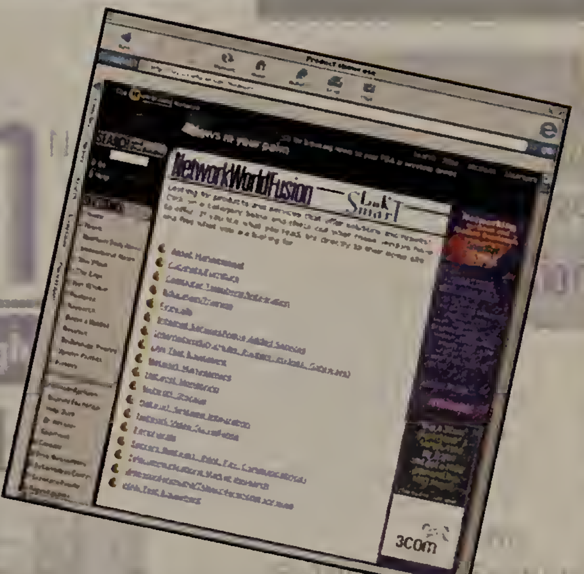

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Software Engineer sought by company in Englewood, CO specializing in satellite TV systems security & conditional access to work in Englewood, CO and other unanticipated job sites in the US. Under close supervision, engage in full life–cycle software development. Specifically, design & develop software applications for Dish Network, Pay–Per–View & internal business procedures. Applications are created in a client/server environment & incorporate Oracle Relational Database Management Systems. They run on Windows NT & UNIX operating systems. Analyze requirements; create designs & design documentation. Code, test & debug the software applications. Use a number of tools & languages including JD–Pro, Clear Case, SEP, Visual Studio, JAVA & C++. Requires Bachelor's in computer science or engineering, including electrical engineering; working knowledge in C++ & developing applications that run on windows and UNIX operating systems (working knowledge may be gained through employment or in an academic setting). 8am-5pm, M-F; $52,000/yr. Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II, #400, 1515 Arapahoe, Denver CO 80202 & refer to Job Order Number CO5006458.

Senior Software Engineer sought by company in Englewood, CO specializing in software development, sales implementation & customization services, to work in Englewood, CO & other unanticipated job sites in the US. At a senior level, engage in full life cycle software development. Specifically, design, develop & test Geographic Information Systems software applications for public utilities or utilities industries. The software applications incorporate client/server architecture & relational database management systems including Informix & SQL/Server; & run on Unix, Linux & Windows Operating Systems. Analyze requirements. Code, test, debug, modify & enhance the new software applications. Use Java, Visual Basic, Delphi, & proprietary languages & tools in developing the software applications. Engage in project management & supervising of software engineers as needed. Requires Bachelor's or foreign equivalent in engineering, including mechanical or electrical engineering, or computer science; 3 yrs exp. in designing & developing geographic information systems for utility industry, which incorporate relational database management systems. 8am-5pm, M-F, $77,846/yr.Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II, #400, 1515 Arapahoe, Denver CO 80202 & refer to Job Order Number CO 5006574.

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SYS. ENGR.

Utilize knowl. of networks & opr. sys. to rsch., dsgn. & dvlp. networks. Spec. duties incl.: (i) install., config., & maintain. backup strategies; (ii) dvlpg. data storage & mgmt. solns.; (iii) dvlpg. sys. security & disaster recovery sys.; (iv) dsgng., implement. & admin. Local Area Networks & Wide Area Networks; & (v) config. & maintain. servers to ensure optimal perform. in order to meet client rqmts. Bachelor's degree or equiv. in Comp. Sci., Math, Bus., Engrg. or Commerce plus 2 yrs. of exp. in position offrd. or as a Network Analyst or System Administrator rqd. Exp. must incl. Novell Netware, Windows NT & CISCO or TCP/IP. High mobility preferred. 40 hrs/wk, 8 am – 5 pm, OT as rqd., $66,670/yr. Oualified applicants report/submit resume to: Fayette County Team PA CareerLink, ATTN: JS Supervisor, 32 Iowa St., Uniontown, PA 15401-3513. Refer to Job Order No. WEB206432.

Software Developer - Deerfield Beach, Florida Requires a Master's Degree in Information Technology and 2 years Visual Basic programming experience. Develop, implement and maintain application software to established standards and specifications; develop application software and implement approved changes using Visual Basic and other approved programming languages. Contact: Joe Bozza, Human Resources, Campus Management Corp, 10 Fairway Drive, Suite 300, Deerfield Beach, FL 33441. Email: jbozza@campusmgmt.com.

DATAFORMIX Technologies, Inc has several openings in New Jersey and other locations nationwide for Programmer Analyst/System Analyst/Software Engineer (PA), with at least two years of experience in any of the following skills.

PA: VB, Delphi, Java, J2EE, JVMPI, JNI, JDI, EJB, SOAP, PB, C++, VC++, Web, E-Commerce, CORBA, Web Telephone, AUTOCAD, AUTODESK SDF, EDI, CGI/Perl, SAP HR (Payroll, Time Management, Payroll Schema Must), XML, XSL, UML, DSDM.

Some positions also require a Bachelors Degree, others Masters Degree. Equivalent degree and experience is accepted. Exc., Pay & Bnfts. Please indicate the position you are applying.

Mail resume to:

HR Dept., Dataformix
Technologies, Inc.,
1075 Easton Avenue, Tower
3, Suite 100,
Somerset, NJ 08873.

PROGRAMMER ANALYST

Analyze & eval. existing or proposed software sys. Dvlps., implements & improves prgms., sys. & related procedures. to process data using in-depth knowl. of the sys. dvlpmt. life cycle. Encodes, tests, debugs & installs opr. prgms. & other sys. software utiliz. knowl. of Lotus Notes databases & related prgm. langs. Bachelor's degree or equiv. in Comp. Sci., Math, Bus., Engrg. or Commerce plus 2 yrs. of experience in position offrd. or as a Program. Analyst, Software Engr. or Sys. Analyst rqd. Exp. must incl.: a) Lotus Notes; & b) Lotus Script. High mobility preferred. 40 hrs/wk, 8 am – 5 pm, OT as rqd., $66,670/yr. Oualified applicants report/submit resume to: Manager, Armstrong County Team PA CareerLink, 1270 North Water St., PO Box 759, Kittanning, PA 16201-0759. Refer to Job Order No. WEB206422.

Systems Administrator (3 Positions): Responsible for performing hardware and software installations and upgrades, developing UNIX shell scripts, and architecting system performance and system tuning enhancements. Coordinate changes to environment with software vendor and operations, interact with software development teams to resolve issues and document actions taken. Additional responsibilities include tuning Oracle and other databases with DBA, installing file server, and trouble shooting production and network related problems. Will also conduct performance tuning, monitoring and escalation. Requires: Bachelor's degree in Computer Science or Engineering and have two years experience in Systems Administration. Must have knowledge of DNS, NIS, NFS, UNIX and HP-UX. 40hrs/wk (8-5); $75,000.00/yr. Send two resumes/responses to Job Orders #2001-829, 2001-830, 2001-953, P.O. Box 989, Concord, OH 03302-0989

Software Developer: Design & develop client/server & web based apps for software consultancy clients. Interface w/Oracle & other dbs using C++, C, VB. JAVA(JDK 1.1.x). HTML, SERVELTS, JDBC, VISUAL AGE, WEBSPHERE, SOL, on Windows NT, UNIX & Mac OS platforms. Long term assignment at cust locations across U.S (60% travel). BS in comp sci, engg or related tech field and 2 yrs exp in development, analysis, or prog. Resumes to: M Kukkala, Sai Ram Consultants, Inc, 2179 Lawrenceville Hwy Suite 202, Lawrenceville, GA 30044

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Paceline Systems is at the forefront of developing advanced switching systems, using InfiniBand (TM) technology for the next generation of web data centers to deliver new levels of performance, efficiency, and service flexibility. We currently have openings for the following:

Hardware Engineers: Design and implement circuit assemblies and electrical circuit card modules and component sections. Support the design of circuit modules PCB's including layout, stacking and routing. Debug prototype modules Design verification testing and signal integrity testing of circuit modules. Will employ ViewDraw and Allegro Viewer. Requires 4 years experience in job or as hardware engineer for telecom industry. Also, demonstrated expertise designing and debugging circuit cards and experience using ViewDraw or Allegro Viewer and working with VHDL language and programmable logic design.

Software Engineers: Will work with senior engineers, you will be developing components of the next generation of networking services, based on high bandwidth Infiniband (TM) technology. Will work with principal and senior engineers to design specific networking services components based on Infiniband technology. Will design and implement networking services and solutions based on functionality and requirements defined. Requires 1 year experience in job or in network software design/development. Also, demonstrated expertise in networking protocols or ATM Networking and using C/C++ and real time OS, such as UNIX or Linux, as well as using two or more of following protocols; DNS, TCP, SLP, DHCP, BOOTP, or BGP.

Senior Test Engineers: Will build test infrastructure for proprietary product verification organization. Will conduct extensive test automation script development for functional testing in accordance with internally developed test plans. Requires 4 years experience in software testing or development. Also, demonstrated expertise in software testing such as developing test plans and functional test automation in datacom test environments as well as experience using one or more scripting languages such as Tcl, Perl, Python

All positions require a Bachelor's degree (or equiv) in CS,EE, Math, Physics, or a closely related field. Interested applicants may send their resume to Bob Lippman, Paceline Systems, 50 Nagog Park, Acton, MA 01720, or F 978-263-8381. jobs@pacelinesystems.com

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IntraLinks, Inc.
We are looking for qualified candidates to fill a number of open IT professional positions of all levels (including entry, advanced and managerial) in our NYC and Boston offices:

Manager of Technology
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Technical Sales Manager
Project Managers
Software Engineers
Consulting Software Engineers/Analysts
Programmer Analysts
OA Analysts
Java Developers
Database Designers

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Senior OA Test Engr. Up to $70,000/Yr, Job Duties: Responsible for QA stds., procedures & metrics, testing proc., manual/automated test scripts for regression & load testing of web based applications, verification/validation of documents/codes at all stages of software development life cycle (SDLC) utilizing problem & code debugging, load run execution, fault tracking, & statistical analysis. Specific job functions: participate in every facet of SDLC including formulation of requirements, design, code reviews, testing; test software applications in Unix & Windows environments; select test cases to verify/validate requirements; identify process design flaws; integrate hardware & software components into working systems; develop & execute test scripts; document & maintain test plans, procedures & reports. Additionally, following code completion & unit testing, retest product against design requirements, document bugs, develop fixes & update test plans. Must be certified as a "COA- Certified Ouality Analyst" & 2 years of exp. with Mercury Automated Test Tools, Object Oriented Programs, UNIX, Java, & Web Environment. Requires BS in Comp. Sci. or Engineering & 2 years of exp. Apply to Pathfire, 245 Hembree Park Drive, Ste. 100, Roswell, GA 30076 with proof to work permanently in US.

Sr. Database Administrator. Maintain multiple ADABAS and ORACLE databases (DB); install & maintain DB mgmt s/w & related products, incl ADABAS, NATURAL, PREDICT, ENTIRE-NET-WORK, ENTIRE-ACCESS, NATURAL SECURITY, & ORACLE RDBMS; design, implement, & maintain DBs & DB dictionaries; monitor DBs for validity, organization, protection, security, & performance; install & configure new versions; proactively monitor & maintain perform; maintain data & program security; & provide guidance & assistance for less exp personnel in DB app development, testing, & maintenance. B.S., Comp.Sci. or equiv.; & 5 yrs exp as Database System Eng, Consultant (or equivalent based on education & experience), 3 yrs of which shd be w/each: SAG products (incl ADABAS, NATURAL), ORACLE, UNIX, CICS, NATURAL SECURITY, PREDICT, DOS/VSE ESA, and ENTIRE. Exp. may be gained concurrently. $64,690/yr. 40 hrs/wk. All resumes must incl Soc Sec #. Apply to your nearest Job Service office or send resume to Job Service, 1316-C N. Broad Street, Edenton, NC 27932. Refer to J.O. #NC 3203861, DOT Code 039. 162-010. If not a U.S. citizen, specify current visa status.

F/T Software Engineer. Responsible for creating Functional Specification documents based on design requests & producing & implementing High Level Designs for assigned functional areas. Perform Unit Testing on developed codes & troubleshoot defects found. Design & implement new modules/enhancements in client server environments & for the billing network system. Provide technical support to clients, evaluate business requirements & develop software & documentation according to established standards working w/ Centura Team Developer w/ embedded SOL, Logic Works, ERWin, Gupta SOL, Sybase SOL Server, MS SOL Server, Visual Basic, MS Access & Crystal Reports. Must have Bachelor's degree in Computer Science or related field Foreign degree equivalent accepted. Must have 4 yrs. exp. in job offered or position w/ same duties. Salary: $63K. Send resume: Betsy Moya, Sema, 701 Waterford Way, Suite 300, Miami, FL 33126.

Vice President-Technology & Operations. Miami, FL. Duties: Invision, plan, & implement technology to enable operational efficiency & to increase revenue through the use of the Internet & other computer technology. Utilize Microsoft Windows XP, Sharepoint, Internet Information Server (IIS), XML, Mobile Information Gateway, Visual Studio, Java, HTML, & Active Server Pages. Develop backend programs integrating w/ Great Plains Accounting software & the use of IBM Websphere & related products. Use of in-depth knowledge of end to end business transactions in an international environment for consumer electronics. Prior significant mgmt background required. Develop business plans & build & manage a team to deliver products. Reqs: M.S. degree in Comp. Info. Systems & 3 yrs exp in the job offered or 3 yrs exp as a Sr Architect/Developer or combination thereof. Exp which may have been obtained concurrently must include 1 yr of exp utilizing Java & IBM Websphere & 3 yrs exp developing & managing computer systems in a business to client relationship. Mail resume to: Kishinchand Parvani, Pres., Transcontinental Overseas, Inc., 1362 NW 78th Ave, Miami, FL 33126.

PROGRAMMER ANALYST

Analyze & eval. existg. or proposed software sys. Dvlps., implmts. & improves prgms., sys. & related procedures to process data using in-depth knowl. of the sys. dvlpmt. life cycle. Encodes, tests, debugs & installs opr. pgms. & other sys. software utiliz. knowl. of Visual Basic prgmg. tools. Bachelor's deg. or equiv. in Comp. Sci., Math, Commerce, Engrg. or Bus. plus 2 yrs. of exp. in position offered or as a Programmer Analyst, Software Engr. or Sys. Analyst rqd. Exp. must incl. a) RDBMS ENVR.: Oracle or Sybase; & b) PROGRAMMING LANGS.: Java or COBOL or PL/SOL. High mobility preferred. 40 hrs/wk, 8 am – 5 pm, OT as rqd., $66,670/yr. Oualified applicants report/submit resume to: Manager, Westmoreland County CareerLink, 300 East Hillis St., Youngwood, PA 15697-1808. Refer to Job Order No. WEB206416.

Integration Software Engineer needed to develop applications & implement advanced integration solutions using SeeBeyond, PeopleSoft, Java, XML, PeopleCode, Monk, & SOL. Apply to: C. Andrews, Global Enterprise Mgrs, 1434 Malcolm Dr, Deresher, PA 19025.

SYS. ENGR.

Analyze & eval. existg. or proposed software sys. Dvlps., implmts. & improves prgms., sys. & related procedures to process data using in-depth knowl. of the software dvlpmt. life cycle. Encodes, tests, debugs & installs opr. pgms. & other sys. software utiliz. knowl. of Visual Basic prgmg. tools. Associate deg. or equiv. in Comp. Sci., Math, Engrg., Bus. or Commerce plus 2 yrs. of exp. in position offered or as a Software Engr. or Sys. Analyst rqd. Exp. must incl. Access or SOL Server & Visual Basic. High mobility preferred. 40 hrs/wk, 8 am – 5 pm, OT as rqd., $66.671/yr. Oualified applicants report/submit resume to: McKeesport/Allegheny Cty. CareerLink, ATTN: JS Supervisor, 345 Fifth Ave., McKeesport, PA 15132-2600. Refer to Job Order No. WEB206426.

SENIOR SYSTEMS ADMINISTRATOR (Multiple Openings) Code, test, and implement client/server in a UNIX environment, applying knowledge of Shell Scripting, Solstice Backup, CAD/CAM, Excaliber EFS, et cetera; perform Sun Solaris server design and implementation, as well as numerous other application installations and configuration, and customer on-site development; troubleshoot and problem solve system installations on Sun E10, 000 Servers and File Systems including Veritas and Solstice; and plan and develop new computer systems or devise ways to apply existing systems' resources to additional operations. Must have four (4) years experience in the job offered, or as a Systems Analyst, Software Engineer, Systems Engineer, Program Analyst, or related, or any suitable combination of education, training, and experience, or related. Hrs: 8a-5p, M-F. Apply to Moorecroft Systems, Inc., Attn: Neville Saunders, Pres. and reference ad #EV0001, 202 Abbey Court, Alpharetta, GA 30004.

CoolPlex Developer II: Utilize CoolPlex & AS/400 to plan, manage, & coord dvlpmt & maintenance of business comp applics prgms. BS in comp sci, engg, or related field, certification by registered CoolPlex s/ware dvlpmt firm in CoolPlex, & at least 4 yrs of business application dvlpmt exp reqd for these positions. $72K & up. Resumes to: K Edwards, Rollins, Inc., 2170 Piedmont Road, NE, Atlanta, GA 30324.

Advanced Computing Technologies, Inc. is seeking a F/T Systems Analyst to design, develop, test, maintain, and support internet/intranet appl. using Java, PHP, CSS, VB Script, Apache Web Server, MS IIS, MS SQL, MS ACCESS etc under UNIX, WindowsNT OS; Maintain and trouble shoot LAN and WAN installations; provide on site maintenance support to clients such as debugging, modifications, fine tuning and code optimization. Require BS in CS or Engineering (any branch) with 2 yrs of relevant exp. Highly competitive salary. Travel Involved. Resumes to HR, 3355 Breckinridge Blvd. Suite 128, Duluth GA 30096.

ABZ CONSULTING, Inc, Atlanta, has immediate multiple openings for exp'ed Prog/Analysts, S/W Engineers and DBAs to develop S/W applications using various H/W, OS, OO mythology/principles, tools, software packages and languages for data warehousing, web/wireless/internet technologies, CRM implementation etc. BS/MS degree req. Highly competitive salaries, travel/relocation req. Send resumes to 3140 Briarcliff Road, Suite A, Atlanta, GA 30329.

Compaq Computer Corporation, the industry leader in world-changing technology is hiring for all levels of the following positions in our New England, New York and New Jersey facilities: Systems, Software and Hardware Engineers and Technical Consultants/Analysts. Interested candidates should submit resume to: HR, Compaq Computer Corp., 200 Forest Street, MRO1-1/K28 Marlboro, MA 01752 or contact through email at jobs.jmm@compaq.com

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SOFTWARE ENGINEERS
TIBURON NETWORKS, INC.,
a small Boston-area company engaged in sophisticated solutions for the optical-powered Internet, seeks to fill Software Engineering positions. Required is a Bachelor's degree in a relevant field (some positions require a Master's degree), and between 3-5 years relevant experience. Specifically:

- **Senior Principal Software Engineer / Technical Lead (Forwarding Data Path);**
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Starting salary from $90,000 - $140,000, 18 days annual earned time off, medical insurance, and other industry competitive benefits. Respond with resume only to: Ms. Judith Hinkle, Tiburon Networks, Inc., Dept. IMSP, 200 Minuteman Road, Andover, MA 01810.
Email: IMSP@tiburonnet.com
Fax: (978) 933-8030 An EOE.

Cholan, Inc. is seeking a Full time Software Engineer to design, develop, test, maintain and support internet/intranet appl using Java, JDBC, Servlets, XML, C++, VB, Oracle etc under UNIX, WindowsNT OS; develop GUIs, write product documentation and integrate test plans; provide on site maintenance support to clients such as debugging, modifications, fine tuning and code optimization. Require BS or foreign equiv in CS or Engg (any branch) with 2 yrs of relevant exp. Highly competitive Salary. 70% travel to client sites involved. Resumes to HR, 6209 W. 126th Street, Overland Park, KS 66209.

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IT Careers in Healthcare

Most everyone is familiar with the cost pressures faced by the medical/ healthcare industry. From government regulations to improving access to and quality of care, healthcare systems are turning to information technology to enable them to work smarter, more quickly and in the best interests of their patients.

On the retail end are companies such as **Walgreens Co.**, headquartered in Chicago. Jennifer Mote, manager of IT recruitment at **Walgreens**, says the IT challenges are broad and exciting. In addition to managing the pharmaceutical needs of literally thousands upon thousands of consumers, **Walgreens** has established an Intranet-based application that provides business-critical information from the data warehouse to more than 3,000 retail store managers. Inventory management systems and Intercom Plus, a pharmacy application, are among the projects developed and implemented by **Walgreens**' more than 700 information technology employees.

According to Mote, the company offers opportunities in application development, systems architecture, database management and design, systems administration, network design, as well as the Help Center to support the retail stores. "These opportunities call upon a wide variety of technical skills such as JAVA, Internet/ Intranet development, 00, Client/Server, ORACLE and AS/400 development skills," says Mote. "Just as important to **Walgreens** are people who want to be part of our team and who will be creative about developing the next generation technology solutions for our business needs.

"Technology is a critical component to our operation," she adds. "We have highly complex IT systems, and are extremely innovative in how we apply technology."

On the care provider side are groups such as **Stellaris Health** and **Kaiser Permanente** who are managing systems and back-up for physician care for literally thousands of patients. **Stellaris**, headquartered in White Plains, NY, has four hospitals – Lawrence Hospital in Bronxville, White Plains Hospital Center, Northern Westchester Hospital in Mount Kisco and Phelps Memorial Hospital in Sleepy Hollow.

The health system brought the four hospitals and associated physicians together two years ago and introduced the first phase of an IT upgrade. "IT is one of the principal strategies in the partnership," says Michael Pagliaro, **Stellaris'** vice president for human resources. The system introduced HBOC to standardize the business systems for all four hospitals and is now moving into its second and third phases where shared clinical information and lab information will be introduced.

To enable the new IT design, **Stellaris** is hiring systems analysts, project managers and business analysts. "These are more senior positions," says Pagliaro. "We are looking for people with experience in the systems and in the healthcare environment. There is plenty of leeway in the healthcare industry to explore the best ways to do things."

Headquartered in Oakland, CA, **Kaiser Permanente's** information technology organization boasts that it's one of the largest IT shops in the United States. The organization has launched a multi-year, groundbreaking project to implement a clinical information system to support care delivery to more than 8.1 million patients worldwide.

"That means we continuously search for talent in architecture design, integration, internal web portal development and application development," says Michael Winkler, marketing manager for **Kaiser Permanente's** Information Technology organization.

The majority of **KP's** jobs are in California, with some regional hiring in Colorado, Ohio, Atlanta and the mid-Atlantic states. "We are the best-kept secret in the IT profession," Winkler says. "Some of the things we're doing in healthcare are revolutionary."

ITcareers

For more job opportunities with healthcare firms, turn to the pages of ITcareers.

- If you'd like to take part in an upcoming ITcareers feature, contact Janis Crawley, 650.312.0607 or janis_crawley@itcareers.net.
- Produced by Carole R. Hedden
- Designed by Aldebaran Graphic Solutions

IT Careers in Atlanta

Atlanta has long been a growing, thriving community. Even with an economic slide, the metropolitan area affords job growth and opportunity for information technology professionals.

The **Southern Company**, headquartered in Atlanta, is the South's largest energy supplier. And, while information technology links the five **Southern Company** utilities (Alabama Power, Georgia Power, Gulf Power, Mississippi Power and Savannah Electric), the company also uses IT to power its energy trading function, custom energy-related services and its wireless telecommunications business. As the winner of JD Power & Associates' top ranking for southern utilities, **Southern Company** increasingly uses IT to enable customers to troubleshoot, manage services and self-serve.

Dan Traynor, director of application services for **Southern Company**, says information technology is critical to reaching the company's primary goals of 5% annual earnings growth and leadership in industry customer satisfaction. Customers use online services to request new service, report problems, review their bills and make payment electronically. Information Resources will introduce this year a new release of EnergyDirect.com, which assists commercial and industrial customers in managing their energy utilization. Projects under way include extension of online employee services and a cooperative inventory management system with **Southern's** largest suppliers.

Traynor says **Southern** is "always on the lookout for people with strong skills in application development, application design and project management. We want people with these fundamental skills." Traynor also looks for people who fit with the company's culture, known as "Southern Style." "You can sum it up simply," he says. "We work with a genuine respect for all stakeholders, to include customers, partners, shareholders, suppliers, employees and team workers – while reaching for higher and higher performance. The two in combination say we are a company where we really rely on one another."

While **Southern Company** has been part of the Atlanta landscape for the past century, so too has been **Equifax Inc.** Founded in 1899 as Retail Credit Company, **Equifax** is one of the world's leading identity authentication services. **Equifax** uses its IT resources to support global commerce, bringing together buyers and sellers through information management, consumer credit systems, authentication and e-commerce capabilities. The company holds a patent for its eIDverifier product, used to authenticate individuals on the Internet. The company also offers Credit Watch, which allows consumers to protect their identity and financial health.

Katherine Crew, vice president for **Equifax** human resources, says the company uses a combination of legacy and leading-edge systems. "We continuously enhance our systems and re-engineer processes around our products," she explains. "Our core credit file was written in Assembler and we work to enhance its data quality. At the same time that we need these relatively old skills, we also need individuals with JAVA and C++ skills." Because **Equifax** has a strong cultural focus on learning, the company assures that those bringing the more dated skills, such as Assembler, also have the opportunity to receive training in new technologies.

Crew says the company hires those with solid programming abilities, as well as those with skills in test and business analysis. "We also look for people with business acumen, who can determine the technologies that will help us achieve business needs," she says. "We look for people based on what they can do today, but also for their potential."

For more job opportunities with firms in Atlanta, turn to the pages of ITcareers.

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Make a turning point in your career with an internationally-recognized cancer center where technological advances and career satisfaction are "Making Cancer History." Continuing our impressive record of growth and development, UT M. D. Anderson Cancer Center is currently seeking IT professionals for the following positions:

Applications Systems Analyst - BS in Computer Science or related field; 3 yrs. analysis/design/project management/ programming exp.; 2 yrs. hands-on PeopleSoft HR, Payroll, technical development exp.

Business Process Consultant - Bachelor's in Computer Science or related field; 3 yrs. systems process analysis and design exp.; Healthcare IS Implementation exp.

Business Systems Analyst - BS in Computer Science or related field; 3 yrs. project management and/or workflow analysis exp. Will function as a project technical consultant for AEMR team.

Business Systems Analyst - BS in Computer Science or related field; 3 yrs. project management and/or workflow analysis exp.; 2 yrs. hands-on PeopleSoft HR, Benefits and Payroll exp.

Sr. Security Analyst - Bachelor's in relevant field; 3 - 4 yrs. computer security experience. Top Secret security exp. preferred.

M. D. Anderson offers a competitive salary and comprehensive benefits package. Qualified candidates are invited to e-mail resumes to: rjjordan@mdanderson.org **or mail to: R. Jordan, 1515 Holcombe Blvd., Box 205, Houston, TX 77030.** Reference code **IDG1001** when applying. EEOE, Smoke-free environment.

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Network World, Inc.

118 Turnpike Road, Southborough, MA 01772
Phone: (508) 460-3333

TO SEND E-MAIL TO NWW STAFF
firstname_lastname@nww.com

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Sales Offices

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Internet: clesker, jweissman@nww.com
(508) 460-3333/FAX: (508) 460-1237

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Internet: tdavis, elisas, tsanders, ajacobs@nww.com
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● **Northeast**
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Internet: kwilde, lgreenberg, kgaffrey @nww.com
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Internet: brandell, anorton@nww.com
(949) 250-3006/FAX: (949) 833-2857

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Tripwire prevents tampering in routers, switches

BY ELLEN MESSMER

PORTLAND, ORE. — Tripwire today is unveiling a management console designed to prevent unauthorized changes to Cisco Catalyst switches and routers by notifying network managers of tampering and automating restoration to original settings.

Available for Windows NT or Unix, the Tripwire for Routers and Switches console software is best placed within the operations center where network monitoring takes place, says Dwayne Melancon, Tripwire's vice president of marketing. Each console can monitor up to 1,000 switches and routers, detecting an unauthorized change to routing and configuration tables, immediately notifying the manager via e-mail or page alert.

Unauthorized changes can occur when systems administrators inadvertently or purposefully alter router or switch configuration settings ordered by the manager in charge. Malicious hacking might be the culprit, Melancon notes, but more often network outages change router and switch configuration.

Because misconfiguration can cause major disruptions to network operation, it's important to be apprised of these incidents and take steps to restore the original settings right away. And that's what the Tripwire console software — which costs $5,000 with an additional $250 for each monitored router or switch — tries to do.

Tripwire came out with an earlier version of this product supporting only routers. Deutsche Bank, which had some problems with systems administrators overriding the wishes of the security manager, has been a customer and a contributor to the Tripwire design. With this latest version, Tripwire fulfills its promise to prevent switch tampering.

The product is catching the eye of corporations that say the Tripwire monitoring tool is the only one they've seen that has the capability to notify a manager when an unauthorized change is made.

"Change management and validation is very important," says Ozzie Kuscan, network manager at Lonza Group, a chemicals manufacturing company that supplies pharmaceutical giants such as Pfizer and Novartis. "The Tripwire tool could be of help in documenting changes."

Lonza, based in Basel, Switzerland, with U.S. headquarters in Fairlawn, N.J., has a frame relay network connecting 10 offices, and it maintains its own routers. Chemical manufacturing is a tightly regulated industry, and the Food and Drug Administration and Lonza's own pharmaceutical customers periodically conduct security audits of its network, Kuscan says. The Tripwire tool appears to add to the "good practices" regulations expected in these audits, he says.

Tripwire: www.tripwire.com

Storage

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plan future storage capacity. Patrol ASRM also provides discovery and management support for host bus adapters, and support for more Fibre Channel switches, Sybase, Microsoft Exchange and Siebel Systems applications, and a wider variety of storage resource reports.

- Computer Associates is promising enhancements to its BrightStor storage platform early next year that will include SAN management software and enterprise storage management software. The goal of CA's BrightStor is to manage any direct-, network- and SAN-attached storage from any vendor.

While welcoming the trend toward open management systems, analysts and users are wary of whether the tools will be used any more efficiently than systems management products from the likes of Tivoli Systems/IBM or CA.

"If I could use one tool kit to manage all my storage in totality and optimize my storage pool, that's great," says Gibbs, who has Compaq StorageWorks, EMC and Network Appliance storage. "All my CIO wants to hear now is how I am going to cut my budget or increase our revenue. If I can go to my CIO and say, 'Let's hold off on buying $50,000 of storage because I have this $10,000 tool,' that makes an excellent case."

But these frameworks may well be easier hyped than executed, others warn.

"If these management tools require a lot of heavy lifting, it will become shelfware," says James Gruener, an analyst with The Yankee Group. "If it is too hard to use, the user is going to say 'I have better things to do.'"

EMC executives are confident their announcement this week points them in the right direction. The components being released are:

- WideSky, middleware that will ship in the fourth quarter and lets software and hardware vendors integrate their applications and products with EMC's Enterprise ControlCenter/Open Edition.
- StorageScope, a utility available in November, which gathers utilization information from storage devices, consolidates the information into a single set of reports and lets IT set thresholds for allocation of storage.
- Replication Manager, available now, is a software component that lets IT standardize and automate the replication and restoration of data. Replication Manager supports EMC Symmetrix arrays. The company will offer full feature parity with Compaq's StorageWorks gear early next year.

The browser-based Enterprise ControlCenter/Open Edition also wisely bundles software that IT is familiar with, such as EMC's TimeFinder and Symmetric Remote Data Facility, making adoption easier, Gruener says.

In addition to ease-of-use questions on the customer end, analysts cite concerns about these open management frameworks. Because these packages will work with any vendors' hardware or software, there is the risk of commoditizing the hardware, thus alienating developers. The second — and bigger concern — is that there are few existing standards or industry-standard APIs that let storage hardware and software work together.

"Every vendor has its own proprietary approach, APIs and point products that solve a particular problem and have to be integrated in a specific fashion. The Storage Network Industry Association should define APIs for discovery, data virtualization, backup and recovery," Gruener says.

Although EMC declined to comment on the APIs that WildSky uses other than to say they are based on the company's 4-year-old E-Infostructure Developers Program, several sources indicated they are EMC-specific. The APIs in Hitachi's HiCommand also are proprietary.

EMC's Enterprise ControlCenter/Open Edition components are available priced by capacity. For instance, if a customer has 14 terabytes of data, StorageScope would cost $50,000. The ControlCenter Console is included in that cost. Hitachi's and BMC's products are also based on terabyte capacity. ■

Storage management frameworks

These vendors have recently announced frameworks or made theirs more interoperable with the systems and applications listed here.

Hitachi Data Systems' HiCommand

Storage systems — Hitachi Lightning 9900 and Thunder 9200, Sun StorEdge T3 and 9900

EMC's Enterprise ControlCenter/Open Edition

Databases — Oracle, DB2, MVS

File systems — Tru64 Unix, AIX, MVS, NetWare, Windows [illegible]

SAN — Brocade, EMC, McData, QLogic

Storage systems — Compaq, HP, Hitachi/Sun, IBM, JBOD

BMC's Patrol Application Storage Resource Manager

Applications — Sybase, Microsoft (Exchange), Siebel

[illegible] — Agilent, Emulex, JNI, QLogic, Inrange

Storage plans

60%

of enterprise IT managers expect to spend money on storage management in the next year, according to an AFCOM Data Center Institute study.

Web services,

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others, but .Net solved our database driver and caching needs."

What about Sun?

While Microsoft entertained 7,000 developers, Sun held a one-day summit up the road in Santa Clara to unveil components of its SunOne architecture, a competing platform to .Net.

The most significant development was that Sun made available its SunOne Starter Kit, which includes all the infrastructure products and tools needed to build and run Web services, or what it calls Services on Demand. The kit includes Forte for Java 3.0, a development tool; the iPlanet Application, Web, Portal, Directory and Unified Development Servers; and the latest Java Software Development Kit.

"Sun hasn't shown a lot of integration," says Gary Hein, an analyst with The Burton Group. "They are taking a page from .Net and trying to put together an infrastructure that is integrated and not cobbled together."

Sun also unveiled an Instant Collaboration Pack focused around instant messaging for the iPlanet Portal Server, standards support around Java APIs for XML, and a set of consulting services.

The rollout was just the first phase of a two-year, three-phase attack. The second phase next year deals with creating Services on Demand for use within a corporation, while the third phase focuses on integrating publicly available Services on Demand. ■

Perks

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that home PCs for employees were not critical. Ford announced that it was officially scrapping the ambitious program it launched in February 2000 to give its roughly 300,000 employees a PC, printer and home Internet access at the cut-rate price of $5 per month (www.nwfusion.com, DocFinder: 6679). When the program, dubbed Model E, was announced, it was hailed as a breakthrough in the way companies would do business in the new Internet economy.

Today, the program's demise is an illustration of how the uncertain economy is causing a shift in IT priorities.

"Companies are pushing resources they have to systems that are essential for their organizations to keep growing and for them to remain competitive," says Brooks Gray, an analyst with Technology Business Research.

"When you're unsure whether your corporate headcount is going to be cut 5% or 10% over a two- to three-month time frame, you're not focused on providing all these extra incentives to your employees," he says. "You're working on streamlining the operations, achieving a more efficient business model and cutting your expenses."

While Ford is the first company to announce an end to a major PC giveaway program, analysts expect others to follow suit. They note many corporations offered PCs, cell phones, pagers and other devices as lures to get and keep good, quality staff. The competitive need for those perks has eroded as the number of layoffs has increased.

"Companies are definitely scrutinizing costs," says Randy Giusto, vice president at market researcher IDC. "If you take a look at some of these [PC giveaway] programs . . . I would think that's one of the things that would probably be the first to go, or at least would be scrutinized quite heavily."

However, at the same time the San Francisco firm that coordinated the Ford program (and received $6.6 million from the automaker for the broken contract) claims that it is conducting business as usual. PeoplePC continues to support the 166,000 Ford employees who have already received PCs, and has announced new deals recently, including a program with Ingersoll-Rand to provide PCs and Internet connectivity to 50,000 current and retired employees. There are programs in progress with companies such as Delta Airlines and Vivendi Universal that continue on track, a PeoplePC spokeswoman says.

Pulling the plug

Before scuttling the program last week, Ford had parceled out

166,000

PCs to its employees for home use.

Other computer vendors say their employee-purchase programs are going smoothly. For example, Dell says it's getting increased interest from businesses looking for new ways to provide benefits to employees. An employee-purchase program it's running for American Airlines is continuing uninterrupted with 75,000 computers already ordered.

One thing that's not clear, though, is exactly how much corporations are paying for the employee PC packages, a consideration that obviously would make a difference as to whether a program stays or goes.

So while the situation hasn't come to ripping home PCs, cell phones and pagers out of the hands of workers — Research In Motion, a wireless device manufacturer, says the "vast majority" of its products are still purchased by businesses for their employees — analysts agree there is an increased scrutiny on how those items are used and paid for.

Yankee Group's Kerravala says a consulting firm he worked at previously changed its policy on cell phones as the economy soured.

"When I got there, the company paid for your cell phone. You never even saw the bill," he says. "What they moved to was the employee got his own cell phone and then submitted the bill to get reimbursed for calls that were business-related. That stopped people from abusing the privilege."

Ulrich Seif, CIO at National Semiconductor, says technology purchases are kept under control at his company by making sure they all are ultimately signed off on by him. Employees that need cell phones to do their jobs, such as sales executives and IT support staff, get them from the company. PDAs are also available to those who decide they need them.

"But common sense prevails, and in this economic climate I have yet to see an order for a PDA," he says. "National was founded in 1959 . . . so we have seen the ups and downs quite often, we also have a solid contingent of longtime employees. All of this has created an individual sense of fiscal responsibility."

Barbara Gomolski, a research director at Gartner, says she has seen cuts come more in the area of monetary bonuses than in IT perks, but wouldn't be surprised to see companies pull back on such IT extras.

"Such incentives are discretionary, and discretionary spending on IT has been hit hard by the events of Sept. 11," she says. ■

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Agreement

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ed, and non-IBM platforms will still be offered.

Nortel says it has tested Symposium on IBM's Intel- and Windows-based servers and has given its stamp of approval for Symposium to run on IBM's eServer xSeries products.

The Marketing Store, a Toronto marketing firm, has used Symposium for the last year to run its customer contact center, which serves clients such as McDonalds USA, Nissan Canada and Infinity Canada.

Julie Card, manager of contact center operations, says the Nortel-IBM pact "could be beneficial to us as a Nortel customer because it expands the kinds of products they'll have to offer."

While Card plans to keep Symposium on Microsoft SQL Server, she foresees her firm going with IBM Global Services for future call center rollouts.

In addition to working with IBM on hardware and software integration, Nortel has named IBM its preferred integrator for installing Nortel enterprise voice-over-IP products, such as Succession Communication Server for Enterprise (CSE) IP PBX, which supports 640 IP phones; Business Communication Manager (BCM) small-office IP PBX; and i2004 line of IP telephones.

This move could signal a shift for Nortel in terms of how it sells telephony and call center products. Traditionally, Nortel has teamed with integration companies such as Williams Telecommunications Systems to sell and install PBXs and call centers. IBM is a more IP- and datacom-oriented integrator.

But Eric Ross, president of Nortel's enterprise solutions, says this is not a shift in how the company will deploy voice products.

"IBM simply becomes another vehicle to move IP telephony," he says.

However, Ross points out IBM Global Services has a well-trained IP force and the company's experience in deploying IP networks was a factor for choosing IBM.

Ross says Nortel is also looking into migrating other voice-over-IP server-based products — such as the Windows Server-based Succession CSE and BCM — to IBM's Wintel server products. He would not say if such a move was definitely in the works.

The Nortel/IBM partnership is similar to a deal made two weeks ago, in which IBM agreed to integrate voice-over-IP products from Cisco, and Cisco, in turn, certified its CallManager IP PBX software to run on IBM's eSeries xServer products.

Nortel: www.nortel.com; IBM Global Services: www-1.ibm.com/services/

State Department

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a measurable return on investments?

Our budget is being more than doubled this year and next. We didn't have the money for the two networks. Thanks to Secretary Powell, Undersecretary [for Management] Grant Green and Congress, they gave us $110 million to do the OpenNet Plus project. We had the money to do the pilot, and we were doing that as the secretary came on board. We didn't have the money to roll it out. It was the same way with the $200 million for the classified LANs. It would have taken us five to 10 years at the pace we were going with little bits of money every year.

How do we make sure the money is spent wisely? We've put out competitive bids. We have professional contractors working with us such as KPMG, Computer Sciences Corp., Electronic Data Systems, Gartner and others. They're all working on different parts of the project. They are ensuring that we're using the latest techniques, the most cost-effective techniques. And we've used governmentwide acquisition contracts [for purchasing hardware] to be the most competitive.

What lessons can corporate network executives learn about network security from your experiences at the State Department?

They ought to look at combining networks. Originally, our unclassified [Web access] and sensitive but unclassified [OpenNet] networks were going to be separate. Corporations [tend to] have separate networks. All the hardware, the software, the routers, the telecommunications lines — everything's duplicated, so it requires more money and more people. If you can combine the two networks properly and not give up security, you can save a lot of money and [manage with fewer] people. ■

Network World, 118 Turnpike Road, Southborough, MA 01772-9108, (508) 460-3333.

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BackSpin Mark Gibbs

The new battleground

Given that the mood of the country is at an all-time low, it would be a reasonable guess that real-world retail sales will be rather flat this holiday season.

As evidence, allow me to submit that the consumers I have talked to (my wife, our friends) are adamant that a trip to the dentist is more appealing than going to the mall.

In part, this feeling is driven by concerns about personal safety, but there's a general feeling of gloom that also makes traipsing around stores unappealing. And somehow, publicly indulging in consumerism just feels wrong — rather like dancing at a funeral.

The majority of us aren't going to cancel Christmas and as a consequence of not wanting to go out, many of us will shop online. Even though prior to Sept. 11 we could have predicted an increase in online spending, we can now be certain the increase will be more significant.

But there are risks in the offing. As we all know, e-commerce is still a relatively new field and many of the vendors are, to be nice, extremely naive in their security and site management, while many users are complete newbies. This is a perfect environment for bad people to do bad things.

What might a terrorist do? He won't go for the big targets such as knocking over www.whitehouse.gov, www.fbi.gov or www.cia.gov. Not only are they too well defended (unless of course, you are a 13-year-old hacker from Peewaukee), there's not much of a terrorist impact in doing so.

I'd suggest that more likely targets are commercial entities such as landsend.com, fingerhut.com and the like. And maybe the terrorists wouldn't just blast these sites off the 'Net. Perhaps they will be more devious and look to exploit the weaknesses in these company's servers.

And weaknesses in e-commerce systems are everywhere. For example, despite the gallons of ink regarding vulnerabilities in Microsoft's Internet Information Service (the Windows NT Web server), a huge number of sites are still vulnerable.

So the terrorists start grabbing credit card data and within 5 minutes of you placing your order for a new sweater for Auntie Flo with sweatersrus.com, your card is working overtime buying high-ticket electronics and Armani suits in Berlin.

And notice how poor the response from that site is? Is it really slow or is someone mounting a denial-of-service (DoS) attack with just enough volume to degrade performance but not enough to stop service?

This is the kind of assault that could wear down our belief in the importance of the Internet. Online vendors will spend money unnecessarily on bigger pipes, consumers will get frustrated and reduce their buying, insurance claims will go up, credit card companies will waste time and money solving fraud, and retailers will lose business and profits in the process.

And why would terrorists do any of this rather than their real-world attacks? To begin with, real-world attacks are expensive, complex and difficult, while attacks mounted online are cheap, relatively simple and safe for the perpetrators.

Even more importantly, the Internet is a huge, visible symbol of capitalism and American influence. Degrading its value to our culture and damaging its role in our business affairs would have as much of an impact as killing off broadcast television or shutting down Hollywood.

So what are you going to do about it? Have you audited your systems to make sure that all the relevant patches have been applied internally and at the corporate edge? Can you detect attacks such as DoS and do you know how to respond?

Fighting terrorism is as much about being prepared and having the right weapons to respond as it is about attitude — being ready and willing to go to battle. And the 'Net and your presence on it are part of the new battleground.

Let's talk about what you're doing at nwcolumn@gibbs.com.

'NetBuzz The Latest on the Internet Industry

Paul McNamara

If you were a GuruNet fan . . .

Your typical desk-bound employee spends a half-hour a day rummaging for information in various company data repositories — often blindly and with lousy results, say those who measure such behavior.

(Pop quiz: People who work in sales spend most of that time looking for a particular type of information. What is it? ... Answer below.)

Bob Rosenschein, founder of Atomica — known as GuruNet until a year ago — promises that his company's client/server software can shorten that half-hour considerably and make what time is left more productive. Having learned the hard way that critical acclaim can't support a business unless someone pays the bills, Atomica is shaking off the vestiges of its consumer-oriented past to pitch "answer delivery" technology to corporate America.

At exactly the wrong time, unfortunately, but that doesn't seem to bother Atomica. The company this week will release "Atomica for Sales and Marketing," as well as announce a bundling agreement with Lotus.

"We are not a search engine," Rosenschein emphasizes. Instead the software lets users click on a word in a document — say Gates — then sit back as all of the relevant information within the organization is brought forward in an easily navigable interface. [illegible] sources can also be tapped. The product figures out from context whether you want Gates, William H., or gates, pearly.

Atomica [illegible] hinges on convincing cash-strapped IT buyers that reclaiming the half hour lost to ineffective searches is worth the price of another software [illegible]

Tough sell.

"Organizations are being required to do more with less," Rosenschein counters, so the [illegible] prove advantageous. Atomica Enterprise costs $1.25 per [illegible] and the company claims customers can recoup that investment through productivity gains within 10 months.

(Quiz answer: Information about their commissions, of course.)

What kind of fools does Microsoft hire?

Did you catch author Mark Goldblatt's hilarious column about Microsoft Word in last Tuesday's *New York Times?* It seems Bill Gates' minions, in their infinite wisdom, decided that the thesaurus feature in the word processor needed a cleansing prior to its latest release.

Goldblatt recounted his attempt to use the Word 2000 thesaurus to find a synonym for a four-letter word beginning with "f" — "fool," not that other one. The thesaurus came up empty, offering not a single alternative: nary a ninny, nincompoop, nor numbskull. This prompted Goldblatt to ask Microsoft what gives. Here's the reply he got from a spokesperson:

"Microsoft's approach regarding the spell checker dictionary and thesaurus is to not suggest words that may have offensive uses or provide offensive definitions for any words. The dictionary and spell checker is updated with each release of Office to ensure that the tools reflect current social and cultural environments."

Reflect whose social and cultural environments? The Taliban's?

Perhaps this is naive, but I'm presuming that the world's most famous high-tech honcho did not play an active roll in the wimpification of Word. He's a busy fellow and tracking a word processor is probably not high on his list. So if I'm Bill Gates, here's what I do after reading Goldblatt's column:

I call my vice president in charge of the Office suite and ask if he had prior knowledge that the thesaurus was being neutered in the name of political correctness.

If the answer is yes, I fire the dimwit for being a dunderhead.

If the answer is no, I tell the VP to find the highest-ranking imbecile who approved the decision and fire that blockhead for gross incompetence.

Only then do I can the VP for suffering such a fool on his staff.

Seriously, Bill, make 'em put the thesaurus back the way it was.

Call me any name you want. The address is buzz@nww.com.

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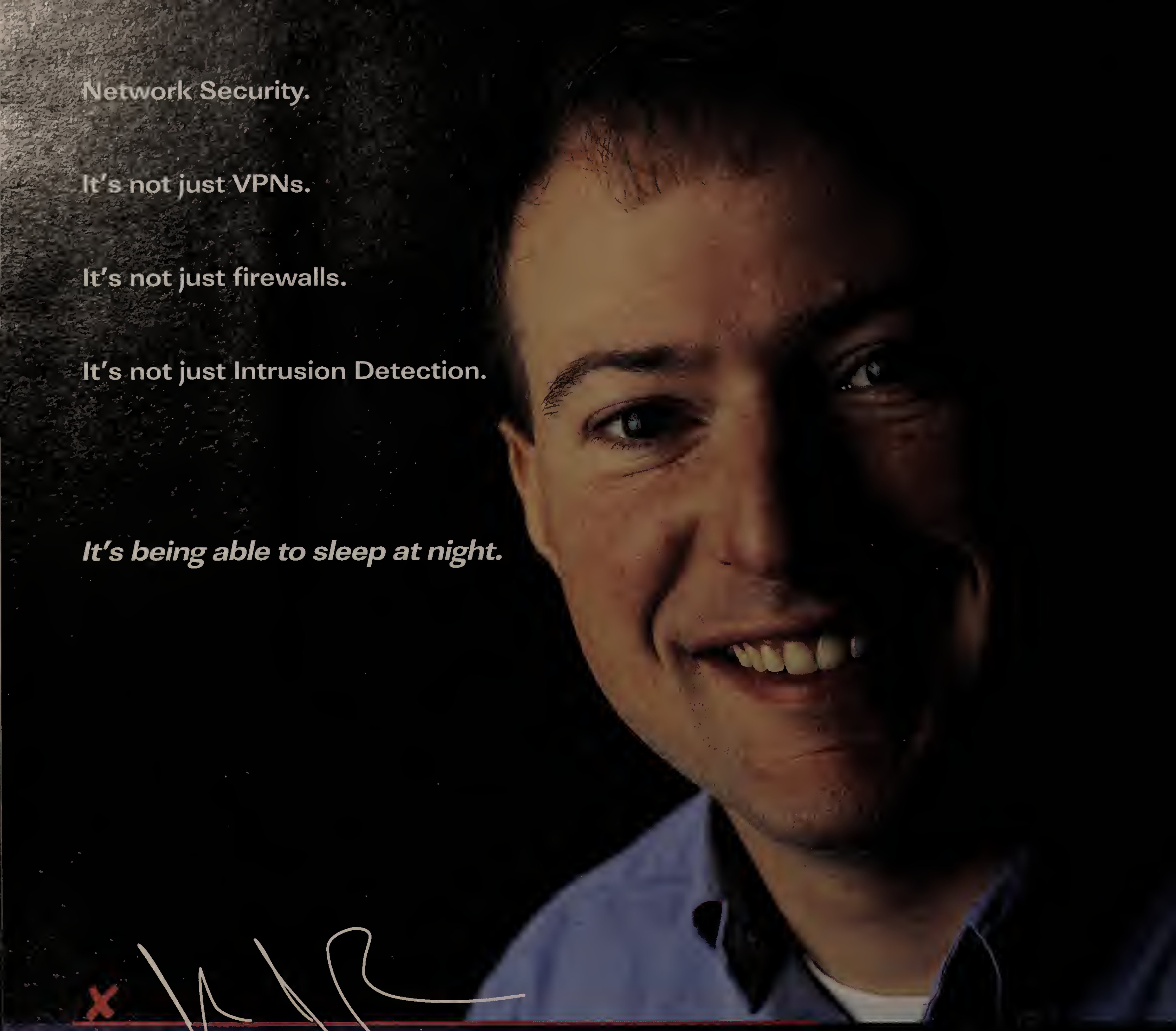

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